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MODERN NAVAL DEVELOPMENTS

By MAURICE PRENDERGAST

IN June last the Chairman of the House of Representatives Naval Committee announced that the building of the five new U.S. battleships of the "Montana" class had been "temporarily deferred." The reason given for this change of policy was the necessity for concentrating constructional energy and resources on the rapid production of new aircraft carriers.

BATTLESHIPS.

From the pages of *Fighting Ships* for 1941[1] we can learn that the "Montanas" were intended to be the greatest, most powerful and most costly group of battleships ever planned. With a length of 903 feet and breadth of 123 feet in a sea-going state they would certainly have displaced 60,000 tons. The projected armament, speed and protection are not given.

The "Two Ocean Navy" Programme provided for the building of seven battleships, of which the "Montanas" were five; the remaining two were the "Illinois" and "Kentucky," which are reputed to be the fifth and sixth units of the 45,000-ton "Iowa class." The keel of the "Kentucky" was laid on 16th February, 1942; no exact date has been reported for the commencement of the "Illinois." Whether one or both ships have been begun, little progress can have been made, and it is therefore likely that these two vessels will join the five leviathans of the "Montana class" on the list of ships intended but suspended. Two ships of the 45,000-ton design ("Iowa" and "New Jersey") were begun in 1940; two more, the "Missouri" and "Wisconsin," were commenced in the middle of 1941, and work on all four is to proceed until they are launched. When the building slips are cleared of all four hulls, the situation will be reviewed and decision made as to whether they shall be worked on any further or not. It is possible that they may be finished off as four very big aircraft carriers. By 1st March, 1942, four battleships of the 35,000-ton type—the "South Dakota," "Indiana," "Massachusetts" and "Alabama," were all afloat and well advanced towards completion. They have a high priority in the schedule of naval construction, and are being hurried on with the utmost zeal, so that all four may be in service by the autumn of the present year.

No new design or details of any battleship types appear in the latest issue of *Fighting Ships*. From its pages we can, however, ascertain that the American "North Carolina" and "Washington," the German "Tirpitz" and the Japanese "Nissin" were all completed in 1941. The first three named are of the 35,000-ton type; the last two are understood to be vessels of over 40,000 tons. A Japanese

[1] *Jane's Fighting Ships*, 1941. Edited by Francis E. McMurtrie, A.I.N.A. (Sampson Low, Marston & Co., Ltd.) £3 3s. net.

battleship of uncertain name, is also mentioned as being due for delivery during 1942.

Coast Attack Ships

This war has provided costly proof that the large battleship is quite unsuitable for operations in narrow waters; indeed, that lesson might have been learnt long ago from the toll taken of old battleships in the Dardanelles during the last war, even before aircraft had become such formidable opponents as they are to-day.

The need for small, tough, heavily armed Coast Attack Ships—successors to the invaluable monitors of the last war—has been frequently advocated in the pages of this JOURNAL. It is interesting, therefore, to see in *Fighting Ships* the design for a vessel of this type prepared for a neutral Power—Sweden, whose naval activities and experience are essentially related to narrow waters and coastal operations.[2] The details given of this design show that these ships are intended to displace 8,000 tons, and to have an armament of four 10 in., six 4.7 in A.A., and eight 40 mm. A.A. guns. They are to be given 10 in. side armour, and have a speed of 23 knots.

It is worth comparing this design with the old monitor, H.M.S. "Terror," which did such valuable service on the North African coast in this war before she was sunk. The "Terror" on a displacement of 7,200 tons carried two 15 in., two 3 in. A.A., and a dozen smaller guns. While she had an 8 in. barbette and a 13 in. gunhouse for her main armament, her hull armour nowhere exceeded 4 in. Her speed, when new, was only 12 knots.

Aircraft Carriers

According to recent reports, the six 27,000 ton U.S. "large cruisers" of the "Alaska" class are to be completed as aircraft carriers.

Only one new aircraft carrier makes her first appearance amongst the illustrations in *Fighting Ships*. She is the U.S.S. "Long Island." Originally she was intended to be a merchant vessel of 7,889 tons gross, and to be driven at a speed of 16 knots by Diesel machinery and a single screw, but she was converted into an escort aircraft carrier with a capacity for 30 fighters or 15 to 20 bombers. She has no funnel or "island" superstructure. Six or seven more ships have been transformed in the same way.

Extemporized carriers such as these have their limitations, but they can be provided quickly and in quantity at a time when there is most urgent need for carrier-borne aircraft at sea. They can put up fighter protection over convoys, and they can offer safe landing space to aircraft catapulted from other vessels.

Cruisers

It has been declared that certain unfinished U.S. cruisers are to be completed as aircraft carriers, but which vessels exactly have been selected for treatment has not been revealed. Apart from the cruiser-battleships, already alluded to, three different types of cruisers are in hand for the U.S. Navy. The first is the 13,000-ton "Baltimore" class of eight ships, of which only four were being worked on with activity last autumn. The second is the 10,000-ton "Cleveland" class composed of 32 vessels, and of these over half a dozen have been launched to date. The third group is made up by the eight members of the 7,000-ton "Atlanta" class, and of these about half are finished and the others are being hurried on to completion.

[2] See Frontispiece.

The launched hulls of the 10,000 ton design—such as the " Cleveland," " Columbia " and " Montpelier "—will probably be the first to be taken in hand for conversion into carriers, because they are the nearest to completion. It is not likely that the "Atlantas " will be altered, because fast light cruisers are urgently wanted as escorts to carriers.

Fighting Ships now contains photographs and plans of the completed " Atlanta," whose main armament is composed of sixteen 5-in. D.P. guns, and not twelve as hitherto supposed. British cruiser types depicted for the first time are the " Nigeria " of the " Fiji " class and the " Naiad " and " Hermione " of the " Dido " class. There is also a large, full-broadside view of the German " Prinz Eugen." The only really new cruiser design presented to us is that for the Swedish " Gota Lejon " and " Tre Kroner." Moderation in all things good seems to be the key-note of their design, for they are of medium size—7,000 tons, of temperate armament —nine 6-in. guns, and of modest speed—30 knots.

Destroyers

It is, perhaps, a sign of the times that the main interest of the new edition of this Annual lies more in the small ships than in the big. Eighty-six new British destroyers have had their names recorded in it for the first time ; of these twenty-nine belong to the " Onslow," " Penn," " Quilliam " and " Raider " groups, and the remainder are " Repeat Hunts." On 1st September, 1939, we had about 170 completed destroyers. According to *Fighting Ships*, since then we have commissioned or commenced 210 more, inclusive of those acquired from the United States and Brazilian navies, making a total of 380 ; but from this we have to deduct the 70 vessels whose names are entered in the War Loss Lists. There is also the reservation that the book does not and cannot mention all the new destroyers that have been completed or begun for the fleets of the Empire. One gains the general impression, however, that despite the ravages of war, we have considerably enlarged our destroyer forces.

High priority is given to destroyer construction in American shipyards, and rapid headway is being made with the output of nearly 200 new craft, of which some have already been delivered. At first it was intended that 193 ships should be built. Unofficial reports aver that the two boats of a special type are to be the first destroyers in the world driven entirely by Diesel engines.

Corvettes

No less than 189 corvettes are mentioned by their names for the first time. Some particulars are given for the Royal Canadian vessels, and from these we can gain an idea of what the corvette type is like. The displacement is given as 725 tons, and the complement as 58. Length (over all) is 193 feet and beam is 32 feet. The armament is one 4-in. A.A. and several smaller guns. With quadruple-expansion engines at full power, 17 knots should be made.

Minesweepers

Attention must be called to the extraordinary number of minesweepers now being built on the other side of the Atlantic for the U.S. Navy. One class alone—the " Conqueror "—is to muster more than 200 vessels. We notice with pleasure that a new series of British minesweepers has inherited the names of famous old-time sloops—" Cadmus," " Rinaldo," " Rosario," and so forth—some of which were the last ships of the Royal Navy to be fitted with sail and be embellished with figureheads.

Admiralty Trawlers

Originally, the practice was to buy, hire or acquire the commercial pattern of steam trawler, as used with the fishing fleets, and adapt it to Service needs. About five years ago, however, it was decided that a new type of vessel should be designed, built and tested at sea, which, whilst retaining trawler characteristics, should be planned to Service requirements and have a more naval appearance. The outcome was the " Basset " and " Mastiff." The new edition of *Fighting Ships* gives an illustration of the Admiralty trawler " Rowan " of the new " Tree " class, which, in turn, is an advance on the " Basset " form. To call these vessels " trawlers " is rather inapposite now, for they bear little external resemblance to the typical trawler pattern : they are far more like small corvettes or patrol gunboats. Many more of these " super-trawlers " appear to be coming into service, some named after dances, others bearing the names of the heroes and heroines of the plays of Shakespeare.

Miscellaneous

Of new submarines we hear very little, and the few British craft alluded to in the Annual are apparently " repeats " of the pre-War " Triton " and " Ursula " designs. After this, the broad stream of naval design diffuses itself into a delta of diversified types. There is the ever-expanding " motorised " division—the motor gunboats, motor torpedo boats, motor anti-submarine craft, motor patrol boats and motor minesweepers. Then there is the enormous " Maintenance " group, comprising depot ships for aircraft, destroyers, submarines, etc., oilers, transports, store and ammunition carriers, repair ships and so forth, down to little tugs and tenders. The United States is swiftly acquiring vast numbers of all these types by construction, purchase and requisition. Of all the neutral navies, Sweden is the only one that is working actively on the creation of new war vessels or the re-building of old ones. The progressive development of the Swedish pattern of " flush-decked " destroyer is an interesting study in design.

Effects of War

War has begun to make its mark on the illustrations of *Fighting Ships*. Ships appear once again in camouflage tints or in " dazzle " painting. Of the latter form of polychromatic pigmentation H.M.S. " Hesperus " is an outstanding example.

New photographs of the " Suffolk " and " Aurora " suggest that our pre-War cruisers are being refitted with tripod masts.

Alterations also figure in those destroyers which we built in the interval between the two World Wars. Their funnels have been cut down, the mainmast removed, and the after group of torpedo-tubes has been replaced by a 4-in. A.A. gun. These changes have also been effected in the " flushdecker " destroyers that are now shared between the Royal and the United States Navies.

Novelties akin to those which appeared in the last war are not to be found in the 1941 *Fighting Ships*. The combatants appear to be engaged on the rapid building of ships that are simply " repeats " of pre-War designs. Daring innovations may exist, but they are carefully withheld from public knowledge. A war that is tending more and more to become a conflict between ships and aircraft, instead of one between ships and ships, will certainly have a profound effect on the whole trend of naval design, and lead to the production of war vessels of unprecedented pattern.

The forty-fifth year of publication of this invaluable publication shows no failure in meeting the very important requirements of those for whom it has to provide.

SOME DOCTRINES FOR WAR

By Major C. A. Swetenham, R.E.

ERRORS and fallacies in these Doctrines can be deduced by comparing them with those enunciated in recent British training publications.

Strategy

The object of the war is to settle by force an otherwise irreconcilable difference of interests between nations. A determined nation will not acknowledge defeat until it is unable to obtain essential war supplies for its armed forces. Though naval blockade and aerial bombardment may impede a supply system, the only certain way of preventing armed forces from obtaining supplies is by the actual occupation of the centres of their production and manufacture.

As these centres must be on land, this can only be accomplished by land forces. It follows that the army is the decisive Service, and that the operations of sea and air forces must be directed to securing victory on land. Unco-ordinated action by navies or air forces will probably prove very wasteful.

Since all big centres of manufacture have been sited for convenience in flattish country with good communications, the essential problem of modern strategy reduces itself to the capture, holding and defence of places situated in such country. Mountainous or marshy country can only provide a refuge for enemy marauding bands, the countering of which is a matter of relatively minor importance. In cases where an obstacle such as a mountain range or river has to be crossed, this must be considered as a separate operation preliminary to the main campaign. Even if successful it gives no guarantee as to the outcome of the decisive operations which must follow.

Weapons and Tactics

Tactics are entirely dependent on what weapons are available. Since weapons are improved from month to month, tactics must be amended accordingly. Thus, though the tactics herein advocated are suitable for 1942, they will undoubtedly need subsequent modification. Experience of the basic properties of modern weapons leads to the following conclusions :—

(1) In open country tanks are the most powerful of all arms.

(2) The most dangerous enemy of the tank is the anti-tank gun.

(3) A.T. guns situated in lightly fortified positions can effectively be neutralized by dive-bombers, after they have been located.

(4) The only efficient way of combating aircraft in the air is with fighter aeroplanes.

(5) Hence dive-bombers require fighter protection whilst in the air to prevent interference from the enemy whilst attacking their objectives.

(6) Owing to the limited amount of fuel that they can carry, fighter aircraft of to-day cannot operate effectively far from their bases.

(7) Modern aircraft need large level areas for airports.

(8) All aircraft are helpless whilst on the ground, and then need protection by other arms against land and air attack.

(9) Tanks also need ports in which they can refit and replenish stores and munitions whilst protected from attack.

(10) Tanks cannot attack strongly held fortifications well equipped with A.T. guns and anti-tank obstacles without suffering great losses.

(11) The density of weapons necessary to repulse a concentrated attack is such that no army can afford to make semi-impregnable any but a few of the most vital positions. It will, however, be possible to hold other important places strongly enough to repulse unsupported armoured forces, and to necessitate a deliberate attack to give any hope of their reduction.

(12) Even the strongest fortifications can in time be pulverized by tank and air bombardment so that a breach may be effected. This breach can best be captured and enlarged by shock infantry with a backing of heavily armoured infantry tanks mounting large-calibre mortars. Breaches in fortified defiles and defended lines should be utilized for the passage of field formations to exploit the success.

(13) Modern fighting forces require vast workshops to equip and maintain them. The manning of the latter must be balanced with the requirements of the Services, and their protection is essential to avoid defeat.

Basic Tactics

It follows from the above points, especially No. 6, that the most important tactical requirements in warfare to-day are the defence and capture of airports.

It follows from point No. 7 that in some countries the nature of the terrain will render it possible to improvize airports in many places. In other countries the possession of the few possible airport sites may prove decisive in the campaign. From Point No. 8 it will be seen that all airports in use must be garrisoned.

It will be seen that a modern campaign consists of a series of chess-like moves with the object of holding or capturing airports so situated as to allow of effective fighter support to field and storm formations in their efforts to destroy the enemy's field formations in battle and to capture his sources of vital supplies. Garrisoned airports should normally be spaced between twenty and fifty miles apart.

To carry out the various tasks necessitated by the basic considerations of strategy, tactics and the properties of modern weapons, the land forces are divided into garrison formations, storm formations and field formations.

The function of the first is to hold our own airports, essential supply centres, and important defiles. The function of the second is to capture defended enemy airports, tank ports and sources of essential supplies, and to force a path through defended defiles. The function of the third is to convoy the supplies and reinforcements of the storm troops, garrisons and essential supply centres. This they can best do by destroying the enemy field armies in battle. But until this has proved possible they must convoy the supply trains.

Organization

Each branch of the land forces is armed and organized to fulfil its special functions.

It follows from Basic Points Nos. 2 and 4 that garrisons must be equipped with A.T. guns and fighter aeroplanes. They also include heavy infantry to combat

shock infantry attacks; heavy and medium artillery for counter-battery work and counter-preparation; and light A.A. guns to discourage dive-bombers.

It follows from Basic Points Nos. 2, 3, 4, 5 and 12 that storm formations must include shock infantry tanks, medium and heavy artillery, and dive-bombers for attack. Anti-tank guns and fighter aircraft will also be required to repel interference with the main operations.

It follows from Basic Points Nos. 1, 2, 3, 4 and 5 that the field formations must include battle tanks, scouting units, dive-bombers and fighters.

In every case all component arms are interdependent. To achieve success full and unselfish co-operation between all arms is vital, and unity of command and purpose is essential.

Tank Tactics

It can be shown mathematically that the more powerful a superior armoured force is, relative to an inferior one that it is engaging, the less will be its actual losses in annihilating the latter. It must, therefore, be the object of every tank commander to concentrate as powerful a force as possible when commencing an action. The principle of " economy of force " does not apply to operations between armoured forces.

Since the concentration of superior force in battle has so decisive an effect, it follows that if one army is decidedly superior in effective strength to another its commander will attempt to bring his united forces into action against the enemy. This he is most likely to accomplish if his storm formations threaten the enemy's vital points, so that his field army will be compelled to attempt to create a diversion.

The commander of an equal or inferior army on the other hand will try by superior skill in manœuvre to weaken the enemy by cutting up small detachments. This he is most likely to accomplish by harrying the convoys of his opponent.

Tank Battles

In tank battles the primary object of the commanders should be so to manœuvre that they take advantage of the features and formation of the battlefield to bring the maximum possible fire-power to bear on a portion of the enemy whilst exposing their own forces to the minimum amount of return fire. The attainment of this object may, however, be influenced by the desirability of barring the advance of the enemy, or of cutting off his retreat.

Tanks will normally fight in close formation so as to bring the maximum fire power to bear on the enemy. They will, however, keep sufficiently far apart to ensure that inaccurate shots aimed at one tank are unlikely to hit its neighbours. As dive-bombing attacks will necessitate dispersion and a consequent loss of fighting efficiency, fighter escort during battle is essential.

Tanks will, whenever possible, fight in the hull-down position. The question as to their speed whilst firing must be decided by the relative importance of a steady gun-platform, the effect on the enemy's aim and the desirability of attaining some tactical feature. On occasion firing at the halt may be of advantage owing to the steadier gun platform and the lessened conspicuousness.

Moves which involve a period of inferiority in fire effect should if possible be concealed by the use of ground. If this is impracticable, a plentiful use must be made of smoke screens.

In order to gain the maximum effect, tank squadrons should always concentrate their fire on that portion of the enemy momentarily forming the easiest target.

Whilst on the move, battle tanks must always be preceded by scouting tanks to give warning of minefields and anti-tank guns. Scouting tanks will normally cover their own withdrawal by a smoke screen.

Once battle has been joined the commander of tank formations should not order retreat unless the alternative is a heavy defeat. A retreating tank force always loses large numbers of slightly damaged tanks which might otherwise be made mobile in the course of a few hours.

The Approach

As the fundamental in order to win a war is to marshal a force superior to that of the enemy at the decisive place and time, all the other Principles of War are only means to help bring about this result.

To surprise the enemy increases the chance of catching him unprepared and at a disadvantage. For this it is essential to obtain adequate information of the enemy's dispositions and movements and at the same time to maintain secrecy about our own.

It is also necessary that a force should always, whether at the halt or on the move, maintain such dispositions as will enable it to repel any attack made on it, however unexpected, whilst at the same time allowing it swiftly to move or attack in any desired direction.

Speed of action is of the greatest aid towards the maintenance of secrecy and the attainment of surprise. But such speed renders much more difficult the maintenance on the move of a formation which is required to be continuously invulnerable yet manœuvrable and allows of the mounting of a co-ordinated attack. Without the first quality the enemy is given an opportunity to launch a surprise attack; without the second an opportunity may be lost; without the third the surprise effect of the speedy move will be diminished.

It will be in this skill in rapid co-ordinated manœuvre that the quality of troops, their commanders and staffs will be displayed. Such skill is the best tactical way of increasing the effect of the weapons with which a force is armed, and can only be achieved through strenuous training.

Reconnaissance

As one of the basic problems is how to maintain the speed of advance without incurring numerous casualties through running unprepared into enemy positions, swift and efficient reconnaissance is of the greatest importance for field formations. Scouting will be carried out by aircraft, tanks, cavalry and motor-cyclists. The task of each unit will be definitely allotted after a study of the available maps, air photographs and reports. Scouting aircraft must help the ground scouts by informing them as to which areas are definitely clear and which must be treated with caution.

Whenever opposition is encountered it should immediately be reported whilst the search is continued for an unobstructed passage round its flank.

Scouting forces should have a backing of heavier tanks, fighters and dive-bombers at call in case it is necessary to disengage them from superior enemy forces.

River Crossings

Rivers are the principal obstacles which field formations will encounter whilst moving over the plains which are their operational areas. If a river crossing is to succeed it is essential that it should achieve surprise as to its place and time. Speed in execution is also necessary. Surprise and speed are rendered difficult by the large quantities of bridging equipment required to cross a broad river.

A bridgehead must first be secured by glider and parachute troops sufficiently armed with anti-tank guns to be able to beat off tank counter-attacks. Defending artillery and dive-bombers must be neutralized by strong dive-bomber, fighter and light A.A. artillery support. An adequate tank force must be got across at the earliest opportunity. A large reserve of bridging equipment and engineer troops must be kept in hand to repair any damage to bridges which may occur.

Although rafts are less vulnerable than bridges, they transport tanks and other equipment so much more slowly than bridges made out of the same amount of material that it is unlikely that a successful attack can be carried through by the use of rafts alone. It may, however, be desirable to raft a few tanks over a broad river to stiffen the bridgehead defence before bridges have been completed.

Landings

In order to gain a large enough footing on a defended shore to allow of subsequent big scale operations, it is essential to secure local air superiority during the landing. Owing to the fact that to-day the performance of land-based fighters is superior to that of ship-borne fighters, it is impracticable to land on a coast defended by a powerful air force unless an air base has been secured within a distance of a hundred miles. If this has been accomplished the tactical problem resembles that of a river crossing. The administrative problem consists largely of unloading ships into special landing craft.

The Defensive

Defensive action can never win a war. It is only justifiable for an army to resort to a defensive strategy if the situation is so bad that attempts at offensive action are likely to lead to disaster. In any case the field formations must always retain their freedom of manœuvre, even if it is only to counter-attack a break-through by the enemy past a fortified position. Nor should storm troops ever be put to hold a fortified position. They may, however, be employed to recapture a position which has been lost.

Defensive detachments are only justified if they seriously impede the movement of the enemy or cause him disproportionate losses. It is obvious that to do so they must block some defile or obstacle which it is essential or at least advisable for him to capture. Since to resist a major deliberate attack such forts require a dense garrison of weapons and men, they should only be used at key positions. It will be impracticable to hold extended lines.

THE QUALIFICATIONS OF A FIGHTER PILOT

By Wing Commander J. O. W. Oliver, D.S.O., D.F.C., R.A.F.

THE first essential of a Fighter pilot is that he should be able to fly instinctively. This is at once apparent when we consider the performance of the aircraft that he will be called upon to handle, as exemplified by the manœuvrability, the acceleration on a dive, the level speed and the sensitivity of controls of a Hurricane or Spitfire. Under combat conditions, his mind, brain and limbs must be co-ordinated to manœuvre his aircraft so that, in the vital split second available, effective fire is brought to bear on an opponent. Therefore, in the initial selection of pilots for their ultimate role, it is imperative that only those who show promise of being above average in their flying capabilities and who in addition possess the quality of initiative should be selected as embryo Fighter pilots. If this doctrine is not accepted, time and effort will be wasted in developing individuals who will never reach the requisite standard.

Of parallel importance with the ability to fly is the ability to shoot effectively. A pilot may be brilliant; he may be able to outfly all rivals; but if when the opportunity comes he cannot instinctively allow the correct deflection and estimate his range, his efforts will have been to no purpose and he might as well have stayed on the ground. Thus the qualifications for a Fighter pilot are that he should be inherently a skilful single-seater pilot and a deadly aerial marksman.

In the development of a Fighter pilot from the *ab initio* stage of flying, emphasis must be laid on the style with which he handles his aircraft. A pilot, like a boxer or a fencer, can develop a good or bad style, and it must be the instructor's job to see that his pupil develops the style of flying most suited to Fighter operations. This style may be summed up as the ability to fly with dash combined with accuracy. Select any two pupil pilots and, taking them dual, set them to carry out various simple manœuvres—"Turn left," "Turn right," "Climb," "Loop," "Roll": if one carries out the instructor's directions with snap and smoothness showing a clean reaction and instinctive co-ordination of controls, while the other is slow and executes his manœuvres in a woolly, slipshod fashion, there should be no doubt in the instructor's mind which is the embryo Fighter pilot, and such a pilot once selected must be encouraged to fly with élan and gusto.

The embryo Fighter pilot must be taught all normal aerobatic manœuvres, which he must practise until he is able to carry them out smoothly, consecutively and without appreciable effort, so that when he fights his aircraft is part of himself. This is vital, since in air combat success more often lies not in luck, but in the pilot's ability to think one move ahead of his opponent. The inexperienced pilot on being hard pressed usually tends after the first manœuvres of a combat in which he feels he has not the measure of his opponent to lose his head and to endeavour to extract himself by some obvious manœuvre which can be easily anticipated by his opponent. This usually takes the form of a steep dive or an unwise pressure on the stick to steepen a turn, thus incurring a high-speed stall, either manœuvre presenting his opponent with a non-deflection shot.

This tendency to panic can be overcome if a pilot is thoroughly confident in his ability to handle his aircraft. While it is true that aerobatics are of little value in

combat, nothing else and no other form of training will give a pilot such complete mastery of his machine. Skilful and accurate aerobatics are the best preparation for combat, and as a method of training preparation for air fighting it is suggested that pupil pilots should be taught to carry out such manœuvres consecutively. Thus the pilot will acquire the power of thinking out his next manœuvre while still in the process of carrying out the current one. In practice this instruction will take the form of progressively teaching the pupil pilot to carry out a sequence of aerobatics, each one being dependent on his maintaining speed, height and accurate control of his aircraft. Thus he could work up from a loop, followed by a loop and a half roll off a loop, maintaining sufficient speed to roll on to his back and by diving out obtain sufficient speed for an upward roll.

Air fighting is either a matter of dive and zoom, or in other words " smash and grab " tactics in which a pilot dives on his target out of the sun, hoping to achieve surprise, but gaining sufficient speed in his dive to gain height after he has fired, in preparation for a second attack ; or else, where opposing aircraft have no advantage of height and " mix it," in milling around one another in an endeavour to be first on the other's tail. Success will go to the man who can keep his head, maintain control and avoid an aerial cul-de-sac by thinking ahead and out-manœuvring his opponent.

Here it is worth while mentioning the effect of " G." The characteristics and effects of " G " must be appreciated by every embryo fighter pilot, since " G " will be his constant companion which becomes a most subversive force unless he knows how to control it. Here again, aerobatics are a valuable preparation, since they harden and accustom the Fighter pilot to the physical effect of manœuvre at high speed, and, where seconds are vital, the pilot who avoids blacking out a split second longer than his opponent may well be the victor.

In studying the make-up of a Fighter pilot, the complexity of his basic training is more easily understood when it is realized that whereas five men make up a crew of a Bomber, the Fighter pilot is pilot, navigator, wireless operator, gunner, and in some cases bomb aimer, all combined. Thus, while his paramount qualities are flying and aerial marksmanship, the pupil Fighter pilot's other attributes must be instilled in him no less thoroughly if he is to obtain proficiency in his trade and to succeed in becoming a reliable member of his squadron.

Operational Methods

An understanding of our operational methods and system of ground control is essential. A scientific and highly intricate system of air defence has been developed and built up around and over these Islands and, although the successful working of this organization from the first moment the enemy is picked up by radiolocation until he is shot down in flames depends on the Fighter pilot carrying out his orders with machine-like or even robot precision, this standard of efficiency will not be obtained unless team-work and sympathy exist between the pilot and ground control. The basis of this mutual understanding lies in knowing how the operational machine works and in viewing his role in the right perspective with those of the other actors in the drama.

Use of Radio-Telephony

Closely allied to this is the necessity for a pilot to understand the capabilities, limitations and purpose of his radio-telephone set. On his R/T depends the leader's ability to receive his orders from the ground, and on them a successful interception

depends. On R/T the pilot is dependent for receiving orders from his Squadron or Section Commander and on them the tactical deployment of the formation depends. The pilot relies on his R/T to convey to his leader reports of " enemy sighted " or the danger of imminent attack and the avoidance of surprise. In bad weather or over 10/10ths cloud, at any time when the pilot is lost, he is dependent on his wireless to get home. Thus the success of any operation in which a Fighter pilot takes part depends largely on the efficient working of his R/T set, and it is essential that he should know its capabilities and limitations, particularly as a check on its efficient maintenance.

Navigation

While the Bomber pilot has the advantage of a navigator, who has himself the advantage of a chartboard and the ability to spread out his maps with time in which to rule lines and measure angles, these advantages are not enjoyed by the Fighter pilot. He flies an unstable aircraft which cannot be flown for more than an instant with " hands off." He cannot afford to put his head in the office for more than a few seconds without the risk of being surprised from behind or out of the sun. There is no space in his cockpit to spread out a map, and because of the necessity for constant vigilance and a watch all round and behind him, reference to his compass must be a fleeting glance to reassure himself that he has not wandered from his course. His map is normally carried tucked in the leg of his flying boot. In defensive operations a pilot may rely to a great extent on ground control to maintain him in position and to get him home by R/T; but should his wireless fail or he becomes engaged in operations necessitating wireless silence, his ability to overcome his difficulties, to read a map and to maintain in his mind a dead reckoning plot of his position assisted by watch and compass must have been cultivated since the commencement of his flying career.

Adaptability

A Fighter pilot must be in all senses adaptable, for consider the variety of operations which are routine for any operational Fighter squadron: a high sweep above 30,000 feet where intelligent use of oxygen is vital; an offensive patrol involving a long flight at sea and ground level in order to locate the small well-camouflaged target to be attacked with bombs; running the gauntlet of every variety of cannon and machine-gun fire; Bomber escort or making a sortie at night. These examples are by no means exhaustive, yet they will suffice to illustrate the wide variety of experiences that await the future Fighter pilot.

Technical Knowledge

While the speed of a Fighter is very great, its endurance in one sortie is small, and the constant concern of a Fighter pilot is his petrol consumption. Technical developments, such as automatic mixture and boost control or a combined throttle and air-screw pitch control, are simplifying his task of drawing maximum power from his engine at varying altitudes consistent with his most economical speed. But a pilot cannot achieve this standard without a basis of simple non-technical instruction so that he is able to understand the capabilities and limitations of his engine, and how he may, with the controls at his disposal, obtain the best performance from it.

Recognition

Another vital part of his training is learning to recognize friend from foe at a glance and from a maximum distance. This is not easy and can only be achieved

by practice in the air and by a conscientious study of models and photographs. But the necessity for " rubbernecking " must be instilled in every pupil pilot from the very beginning, so that the whole time he is flying he is studying the sky and making a mental note of the type, position, course and height of every aircraft he sees. He must be made to realize that if he sees three aircraft, there are probably six more that he has not seen. It is an accepted fact that it is possible for an inexperienced pilot to have gone through an intensive dog-fight in which his own aircraft has been shot up and only to have seen the aircraft that he is endeavouring to formate on.

Team Work

Although the pilot of a single seater Fighter is both captain and crew, in modern Fighter tactics team work is an essential component for success. The squadron that hunts and fights as a team will secure most successes and incur least losses. The most appropriate motto for a Fighter pilot is " One for all and all for one." Team work is intimately connected with morale, and formation fighting consists of unselfish and devoted backing up in which the man who shoots down the Hun may have done the least work.

Formation Flying and " Weaving "

In peace time we learnt to fly in polished rigid formations at a minimum rigid distance between each aircraft. In war our pageant formations are useless and practical operational formation flying means the ability to maintain a relative position while frequently changing direction in three dimensions. In plain language keeping station, but at the same time " Weaving." " Weaving " is a knack which is not difficult to learn, but if its purpose is not appreciated it results in stragglers who weaken a formation, let down their friends, and for whom there is little or no future.

Night Fighting

Under the present policy, all single-engined squadrons are committed to fly by night both during moonlight and non-moon conditions. To the average pilot who has flown a Hurricane or Spitfire for approximately thirty to forty hours by day and who has had a thorough training in instrument flying this should present no difficulty. Of the specialized Night Fighter there are three standard types: the twin-engined Beaufighter, the Defiant, which is a single-engined turret Fighter without forward guns, and the Havoc, which is also a twin and specializes in " Intruder " sorties to the Continent, seeking to destroy the enemy in the vicinity of his own aerodromes. The crew of the Defiant consists of pilot and air gunner; the Beaufighter of pilot and observer; the Intruder of pilot, observer and W/T operator. The salient qualification of a Night Fighter crew is team work, which is achieved by the pilot and crew each appreciating the difficulties of the other fellow's job and knowing what he is trying to do. This is best illustrated in a Defiant, where the pilot must fly his aircraft to the best advantage of his air gunner, and in the specially equipped Beaufighter where liaison and understanding between pilot and observer is essential to success.

Night Fighters operate singly and their task, besides lacking much of the excitement and thrill of day fighting, has none of the obvious stimulants to morale which fighting in Squadrons or Wing formations possesses. It calls for a different type of individual and a different type of courage: cold-blooded courage embodying mental endurance and tenacity of purpose. These are mature qualities, and it may

be that while under twenty-five is the normal age for a day pilot, between twenty five and thirty may prove a more suitable age for night fighting.

The tension of waiting to fly at night is more wearying than the actual operation. Getting off in the darkness without loss of time calls for unhurried efficiency which can only be achieved by a ritual of practised cockpit drill and disciplined adherence to the routine of aerodrome control. In taking off from the flare path the night pilot must achieve the ability to concentrate on his instruments before the last flare is passed. The vital portion of a take-off at night is the climb up to 2,000 feet during which the pilot is settling down to his instruments, raising his undercarriage and changing pitch. By careful demonstration and subsequent individual practice and implicit adherence to routine, the danger of losing control immediately after leaving the flarepath at night can largely be eliminated.

Once at operational height, the Night Fighter heads his aircraft and controls his height and speed as ordered by the ground control over the R/T. With the Beaufighter, once the observer has made contact, team work, accurate flying, great concentration and extreme patience are required. There is no better example of this than the incident of the Beaufighter that found a Hun in the vicinity of Merseyside and stalked its quarry to a successful conclusion in the vicinity of the French coast.

To generalize, it is true to say that the Night Fighter need not possess the dash and aerobatic ability of the Day Fighter, but his flying ability must be of a very high order, particularly in regard to instrument flying. His job is one which cannot be learned except by experience, but initial remarks regarding the necessity for restricting the selection of embryo Fighter pilots to those of above average category are equally applicable to the role of the Night Fighter if accidents and waste of instructional and subsequent operational effort are to be avoided.

Flying under black-out conditions, taking off on instruments, approaching to land in bad visibility by instruments and radio aids all call for great skill, precision of mind and mental endurance; but in common with the Day Fighter the Night Fighter must possess the aggressive spirit that makes him determined, no matter what the difficulties and hazards, to seek out the enemy and destroy him.

Conclusion

To sum up, success as a Fighter pilot depends primarily on individual skill and secondly on confidence based on a thorough knowledge of his trade.

THE ALASKA HIGHWAY

By E. R. YARHAM.

A PROJECT which vies with the famous Burma Road in strategic value is that of the road which is now being thrust through the province of Alberta, and thence through the almost uncharted wildernesses of North-West British Columbia and the Yukon to Fairbanks, in the heart of Alaska. Only 56 miles separate Alaska from East Cape in Siberia ; and it is significant that the Soviet Government have built 5,000 miles of new road system in the Far East during the past decade, and that by the end of 1942 this should have reached East Cape.

The travail of war has brought this conception of a road linking continental United States to Alaska to birth. Although an immense amount of preliminary work, including the survey of suggested routes, had been carried through, and although the project found favour in military and commercial circles in both the United States and Canada, its early execution was shelved owing to the calls made by the outbreak of war upon Canadian energies and the temporary diversion of American interest from the Pacific to the Atlantic Ocean. Indeed, less than two months before Japan's treacherous attack, reports from Government sources in both countries suggested that the construction of the road was not considered a war-time issue.

Pearl Harbour brought about a complete reversion of outlook as to the need for such a road. Indeed, the necessity for direct land communication with Alaska became imperative. This great northern territory of the United States covers 586,000 square miles, equal to the combined areas of Germany, Italy and France. With a coastline of 15,000 miles, it is at present virtually an island that can only be reached by air or over long and dangerous ocean routes. Yet it is the New World's first outpost against the Orient, closer to Japan than any other United States possession except the Philippines, and the handicap of lack of road communications has been severely felt during the efforts to reinforce it. A land highway is essential, both from the point of view of present defence and the longer-term view of future offensive action. Such a road would be a " back-door highway " along which troops, guns, munitions and other supplies from the great arsenals of North America could be carried, close to the protecting ramparts of Canada's western ranges, to the naval and military bases of Alaska. Of high importance also is the fact that the road, when completed, will release sea transport, of which there is such an urgent need elsewhere.

Japan may carry the war to Siberia. This would invest Alaska with even greater strategic importance. An attack on Alaska itself is by no means out of the question. The recent occupation of some of the western Aleutians may be preparatory to this, and certainly heralds naval action against America's sea routes in the Northern Pacific. In a speech to the American people last May Vice-President Henry Wallace warned them to be prepared for an attack by Japan on Alaska, in conjunction with an attempt to create an uprising in Latin America. A short time earlier Premier Hepburn of Ontario predicted a Japanese assault on Alaska, and visualized the enemy infiltrating down the western coast of Canada.

The road will be of incalculable value in helping to build up the striking power of the Alaskan bases as spring-boards for offensive action against the Japanese mainland. Kodiak Island, South-West of the Alaskan Peninsula, is being developed

as a naval and military station, and America's most westerly outpost is Dutch Harbour, 675 miles farther out into the Pacific. Dutch Harbour has always been a focal point in American plans for the defence of the Pacific, and has been called the back-door to the mainland of the United States and Canada. It lies within 1,700 miles of Japanese naval bases and is within bomber range of the enemy's war industries. Therefore, so long as the Aleutian Islands are held, Tokyo itself, 2,400 miles from Dutch Harbour, is under constant threat, and the road will prove a vital factor in enabling America to hold them.

Alaska is also an essential link in the aerial highway between the United States and the Soviet Union via Siberia. Many aeroplanes have been flown to aid the Russians over this route, which is shorter than that from San Francisco to Vladivostok. Fairbanks, the proposed terminus of the highway, lies on the great circle routes from Leningrad and Moscow to New York, and the shortest route between New York and Tokyo passes close to it. The most westerly town in Alaska is Nome, which is comparatively few miles distant from Russia across the Behring Strait. Even the negligible channel across the strait is divided by the Diomede Islands, which lie midway between East Cape (Siberia) and Cape Prince of Wales (Alaska). Supplies for Russia and China transported over the Alaska Highway could be shipped through the Behring Strait and carried along Russia's northern seaway—the historic North-East Passage—to Archangel, or ferried across the strait and taken along the new Russian roads to Irkutsk, on the Trans-Siberian Railway. From thence they could be railed westward to Moscow for distribution, or freighted to Alma Ata on the Turksib Railway, and then carried by truck to Chungking. A devious route, it is true, yet it would be 5,000 miles shorter than the only alternative route—since the Burma Road is closed—via the Cape, the Trans-Persian Railway, and Alma Ata.

This outline of strategic considerations proves the imperative need of completing the Alaska Highway, which the American Government propose to follow up by a railway at the earliest possible moment. Of course, the road would have had to come some day, even if there had been no war. Far-sighted statesmen, business men and engineers in the United States, Canada and Alaska itself have long advocated it as necessary to the safety, commercial prosperity and exploitation of the agricultural, mineral and forestry resources of Alaska, British Columbia and the Yukon. The genesis of the scheme goes back to the early years of the present century, when the development of mining in the Far North emphasized the need for better communications, and later the advent of mechanized transport stressed this aspect even more.

It is a matter of almost-forgotten history that as far back as 1905 the Japanese were fully aware of the strategic possibilities of the projected road. Edward Henry Harriman, the famous American financier and railroad magnate, was negotiating with the object of building a railway to Alaska, and then he intended extending it across the Behring Strait by bridge or tunnel to connect with the European railroad systems. But the Russo-Japanese War called a halt to these plans, and at the Peace of Portsmouth in 1905 the Japanese insisted on the abandonment of the scheme, fearing that the railway would provide Russia with a supply line in the event of a future war. After the War of 1914–1918 an Alaskan engineer, Donald MacDonald, contacted the Soviet Government with proposals for the construction of roads to North-East Siberia linking up across the Strait with the projected Alaska Highway The Soviet approached MacDonald for advice about the technical details of road

construction in the sub-Arctic, and the Russians have carried through a big programme of road building in eastern Siberia, as mentioned above.

MacDonald was dubbed "Father of the Alaska Highway" and, when the scheme crystallized in 1930 with the appointment of an International Commission by Canada and the United States, he was selected as the Alaskan representative. Ground and aerial surveys were carried out, and MacDonald blazed trail, on foot and by dog sled, 700 miles of road in the northern wilderness. Because of the ensuing economic depression the Canadian members of the Commission did not submit a report, but the Americans stated that not only was the highway physically and economically feasible, but that it would prove of inestimable benefit in opening up and developing Alaska. A few years later the two countries agreed to set up another Commission, and in 1938 the British Columbian Legislature voted 25,000 dollars for a preliminary survey of the route. A very heavy programme was carried through: various possible routes were examined by air and ground reconnaissance; great numbers of photographs were taken; hunters, miners, prospectors, surveyors and others with knowledge of the country traversed were interviewed; meteorological, mining, forestry and natural resources reports were examined; the areas suitable for various types of agriculture were determined; the possibilities of attracting tourists and facilities for sport were also studied; and the economics of construction, maintenance, and the revenue likely to be derived were likewise reviewed.

When the report was placed before the Canadian House of Commons two routes were suggested as possible: one running northward from Hazelton on the Skeena River and the other from Prince George on the Fraser River. But for the war nothing was likely to have come of this report, finance being a stumbling block. The Dominion could not afford to pay half the cost of the required 1,500 miles, estimated at between 25,000,000 and 30,000,000 dollars. MacDonald reasoned that in return for a transportation corridor of vital commercial and military importance the United States would be willing to pay more than its *pro rata* share of the cost, and Canada might then allow goods to move between the U.S.A. and Alaska without payment of duty. Actually, a few years ago an offer came from Wall Street to finance the enterprise in return for certain concessions, but rightly enough Canada refused. It was pointed out that though Canada herself might not be able to build the highway, as the defence of the Dominion was one of the most important aspects of the question, the British Government should share with the British Columbian and Canadian Governments the financing of the Canadian section. The danger from the Pacific has swept aside all such objections, and Washington has offered to bear the whole cost and the war-time maintenance of the road, provided that the American Government is allowed to build it and retain certain privileges on the Canadian sections. After the war the road will become part of the Canadian highway system and will be kept up by the Dominion.

The route finally chosen is neither of those recommended by the Joint Commission. In 1940 a Defence Board was set up by Canada and the United States, and it rejected the Hazelton route as being too near the coast and therefore open to attack, while the Prince George route involved serious engineering difficulties. Military considerations naturally prevailed, and therefore the Board decided upon a route lying much farther eastward, running from Fort St. John in the Peace River region, through Fort Nelson and Whitehorse to the Alaskan boundary and thence on to Fairbanks. This route has two advantages over the others: it has a lighter

snowfall and can be kept open virtually all the year round, and it links up with the existing routes in the Peace River district, which will then have direct access to the coast. On the other hand the route involves more new construction than the western alternatives, but the third consideration which prevailed with the Joint Defence Board was the fact that during the past year the Canadian Government has established a chain of airports between Edmonton and Dawson in the Yukon, these being Grande Prairie, Fort St. John, Fort Nelson, and Watson Lake. To the building of these Canada has devoted many millions of dollars, and the work is a form of *quid pro quo* for America's financing of the road itself. So far a great part of the supplies for these aerodromes has had to be carried by air, and it was deemed advisable for them to be linked up by road. These airports are of great importance, since until they were built the only route to Alaska was up the coast of British Columbia and the American Panhandle (the queerly shaped stretch of Alaska which cuts into Canada's North Pacific littoral). The coast is rugged and wild, fogs are prevalent, and the weather is uncertain, although Pan-American Airways has had a service for about three years. Nevertheless, the inland route is far preferable.

The route decided upon makes use of the existing highway system through Edmonton to Grande Prairie, from whence a moderately good road goes as far as the frontier of British Columbia, but beyond that are nothing but rough trails. The new road will run North-West from Grande Prairie to Fort St. John, thence North-North-West to Fort Nelson, and will enter the Yukon just South of Watson Lake. Then it will run almost due West to Whitehorse, then again North-West to Boundary through almost unknown country. There it will turn South-West to Big Delta on the Tanana River. From there a 75-mile road runs North to Fairbanks. Ground reconnaissance units, equipped with dog teams and all essential equipment and stores, and led by men who know the Far North intimately, have been working in the area beyond Fort Nelson since early this year. For about five months they were out of contact with the outside world except by aeroplane. How long the road will take to complete is a matter for conjecture. Estimates of the time necessary vary between eighteen and twenty-four months, but it is hoped to rush a pilot road through by the end of this year. This will be complete with by-passes and rough bridges and capable of handling two-way traffic.

Topographical and engineering difficulties are many, but they are not considered insuperable. In parts the route cuts across open prairies and sometimes passes through heavy timber, but, generally speaking, it traverses less difficult passages through the Rockies and their spurs than the routes which were passed over. The country in the North of British Columbia away to the Yukon is lightly timbered, with much dry ground and open valleys. In such areas the obstacles are not so serious as where the route runs over tundra and muskeg. Long stretches of the road will pass over this type of territory, which offers the greatest difficulties and calls for the highest expenditure. Old-timers in the North do not like this soggy stuff and fear it will take a lot of defeating, but the American engineers are tackling it by a system of drainage which has already been successfully used by the railways. The final plans are for a road 24-feet wide, with crushed rock as its basis and a gravel surface.

The work is in charge of Brigadier-General William M. Hoge, of the United States Army. He is an engineer with a distinguished record. His headquarters are at Dawson Creek, the southernmost base of operations, close to the boundary of Alberta and British Columbia. Working with him is a large contingent of military

engineers commanding specially selected truck drivers and workers. Their equipment is excellent. Every man's personal outfit includes the heavy Arctic issue of parkas, fur caps, etc., for temperatures may drop anything from 30 to 50 degrees below zero. Besides this they have clothing for summer wear, including mosquito bars and nets. During the short, almost torrid summer, temperatures even in Alaska may rise to 100 degrees in the shade, and insects are the bane of life. Temporary tent camps have been erected along the route.

It can be said definitely that things are moving fast. Men have been working night and day, ignoring the temporary camps. And it is not only the Americans who have been working to the limit. Praise must be given to the Canadian truckers, most of whom have been drawn from the Peace River block farms. They almost live in their trucks, day in, day out, even in the worst of weather. There are two drivers to each truck, and for the second a coffin-like box is erected on top of the truck. There he sleeps—like a log, despite the rough track—as he alternates with his mate at the wheel in roughly ten-hour shifts. It takes from thirty-six to sixty hours, depending upon road conditions and possible mechanical trouble, to complete the 700 miles return trip from Dawson Creek to Nelson. At difficult stretches last winter small tractors and horse teams were stationed to help the trucks through the mud and up hills.

The Americans have taken North every type of modern road equipment, including mechanical shovels, the largest cat and bulldozers yet produced, drag lines and graders. Heavy army trucks have been employed for the transport of men and supplies, and also large numbers of little jeeps (of which the British Army made much use in Burma) for lighter work. These are small enough for four men to lift, yet are equipped with four-wheel drive and can get in and out of almost anywhere. Fort St. John, the first important point on the newly-constructed road, has seen more traffic than ever before in its existence—a constant rumble night and day, as the cumbersome shovels and caterpillar tractors, the trucks with supplies and men, and the saucy jeeps have pushed relentlessly on into a northern wilderness which until this year was given over to Indian trappers and a few tough pioneers and prospectors, and whose only reminder of civilization was the occasional drone of an aeroplane overhead.

When the highway is completed it will be possible to rush truckloads of men and material from Edmonton to Fairbanks, along a perfectly safe route, in about eighty hours. To-day, by the ocean route, open to dangers of bombing, mine and submarine, it needs about nine days to transport material to Seward or Anchorage, and thence by the Alaska Railroad to Fairbanks.

TECHNICAL PLANNING IN WAR

By Brigadier H. M. Hordern, O.B.E., M.C., R.A., *p.a.c.*

TECHNICAL possibilities of every kind must be taken into account in the planning of war. Decisions in regard to them are often of vital importance, and in making them technical knowledge and not merely technical advice is an absolute necessity. No one without personal knowledge can make correct decisions and take resolute action. Few subjects are so simple that decisions can be reached by listening to the opinions of an expert without fully understanding the reasons on which the opinion is based. The expert is always a specialist ; if the best expert advice is needed it will be very specialized and several specialists will all have to be consulted.

The officer making the decision must not collect advice so much as follow the reasons and be able, from his own wider knowledge, to sift the reasons, giving each due weight and no more. Frequently specialists disagree, because each is only seeing a very small different part of the subject. The reasons, therefore, are an all-important factor and must be fully understood and appreciated. In this way the officer becomes, as it were, the embodiment of all the expert knowledge ; and he is not listening to opposing arguments, but listening to facts which, being true, cannot oppose each other. Only in this way, by the possession of personal knowledge, can a true decision be reached and resolute action be taken.

The wide personal knowledge which must be possessed by those on whom the technical decisions rest must be supported by judgment. The knowledge alone will not guarantee a right decision. It is not knowledge to over-ride the statements of the specialized experts which must be the goal, but knowledge to judge the relative values. In fact a trained judgment is wanted. It would be a mistake to imagine that expert knowledge automatically supplies this quality.

New scientific discoveries, and improvements in weapons, in communications and in mobility all produce the need for constant change. Yet, through it all, there is no chance of any real trial of the course of action selected on anything like the scale or conditions of war. Peace-time trials on a small scale and under artificial conditions call for trained judgment of a high order to interpolate them in their proper perspective before committing the forces to a course of action which it may not be possible to alter.

This same judgment is still constantly called upon in war. Results obtained in one theatre must be applied elsewhere under different conditions. The lessons of the forests of Burma must be applied, if possible, to the deserts of Libya and so on. Decisions also, owing to urgency, must sometimes be made without the trials that would have been considered necessary in peace. It is in the development of this trained judgment to the highest degree that the secret lies. In this we have the goal on the attainment of which victory will largely depend, however brave and well led the Services may be and however skilled the scientists and technicians who give their expert advice.

By far the most important application of these qualities of knowledge and judgment lies in looking forward into the future. The judgment we need is going to give us the power to take some new scientific or engineering discovery and foresee its application to war. This means not only how to turn it into a weapon of offence

or defence, but, which is equally important, how to use it and therefore how to adapt the finer details of design to Service conditions; where to compromise on desirable features and where to accept alternative sacrifices to obtain them. We need also the power to foresee possible antidotes to the new weapon by making use perhaps of old principles never before harnessed in the service of war.

All these preparations must be ready when the day of battle arrives and ready on a scale large enough to ensure success. This is a question of technical forethought which can never be exercised by an officer trained in tactics and strategy only; it must be exercised in the technical sphere, or rather the combined technical and military sphere, years before there is a real demand. The knowledge that the enemy has a better defence against our present weapons or a better weapon with which to attack will come too late; he will then be years ahead. *The time to start design of a new weapon is when the student of modern tactics can see no need for it.*

Technical Staffs

These requirements can only be met by special bodies of men—technical staffs set aside for these special duties and endowed with full powers and responsibility. The best material only must be drawn on, men with the best brains and the widest outlook; men who see things offensively, not defensively, nor yet scientifically; men whose point of view is that of the man in the front line rather than that of the staff at the base or the worker in factory or laboratory. The need for the right point of view cannot be too strongly insisted upon.

The requirements constitute a very considerable responsibility, far too great for any one man or even any body of men unless each of them possesses, in the highest degree we can accomplish, a combined training in science, in engineering and in war, and unless each one of them is able to bring to the conference table a balanced and trained judgment and not a one-sided opinion. What is needed is not a staff to pass an uninformed opinion on a quantity of expert advice given from different angles, but a staff to decide difficult questions from the widest knowledge which will enable them to sift the evidence of all the specialists.

The needs of this country are greater than those of others with more aggressive intentions, since the defence can never know sufficiently far in advance when the attack is coming. Whereas the aggressor need only prepare designs which are to be ready at his selected time, the defence must be always at work preparing for eventualities. In fact there should be a permanent staff continually preparing technical equipment while avoiding the danger of committing the Services too deeply to weapons which may be obsolete if the aggression is long delayed.

A staff of this nature can never be assembled from a mixture of specialists. It must be an institution making the work a lifelong study and providing the continuity which is inseparable from the requirements. A considerable knowledge of the equipment already in the Service and of Service methods of maintenance is an important factor. The user's point of view and the difficulty of training large numbers of men to operate complicated equipment has also to be taken into account; it is just as important that equipment should remain serviceable and efficient as that the best should be provided in the first place; the designer can go far to make this possible.

Technical Planning

Weapons must be designed several years in advance of requirements if they are to pass through the stages of development essential to obtain the best results

before general adoption. Forethought and planning of a high order is needed to be able to predict the weapon required so far ahead. *The weapon must be actually in the hands of the users in decisive numbers by the time the need for it is apparent to the users themselves.* At all costs the technical initiative must be seized and held; the enemy must be forced to develop hurriedly, and therefore inefficiently, weapons to neutralize our own, and on no account must equipment be designed to conform to his plan of action.

No knowledge of science, engineering or war alone can accomplish this, nor can advice from three separate specialists, no matter how high they have risen in their three respective professions. The expert specialist can only answer questions on his own subject; he has not the power to devise the question or rather the multitude of questions which must arise within the minds of the men who are going to plan a battle of the future against an enemy who has not yet disclosed the weapons with which he intends to fight. To prepare for the war of 1939 we should have had a good idea of the weapons needed by 1933.

Planning on such a scale as this must be accomplished in two stages. The first stage is the design, construction, testing and modifying of an experimental model up to the production of the final manufacturing drawings. The second stage is that of actual adoption into the Service, embracing the production, inspection and issue of both equipment and spares.

At the beginning of each stage an important decision is needed. Not all the equipment passing successfully through the first stage will enter the second. The decision on the first stage must be the absolute responsibility of the technical staff, who will of course consult specialists, including the operational or planning staffs, though many of the views of the latter are best obtained when a model is under test. The decision on the second stage is the joint responsibility of those staffs. Factors, such as the time required for production in quantity and the earliest date when completion must be ensured, have to be taken into account and weighed against the probability of a further improvement passing through the first stage in time for production. Even then it is not always wise to adopt a new model if it shows only slight improvement. It may be better to keep to one already in service to avoid complication in maintenance.

Technical Training

Given a technical staff with the knowledge of what is required, how is it to be obtained? Firstly, with what material should the start be made? There are three subjects each with many branches to study, Science, Engineering, and War, and no-one who has given the matter careful thought can doubt that the last must predominate. Everything depends on War being the aim and goal of all the energy expended.

Men are wanted for a technical staff who have dedicated their careers to fighting and not to the more peaceful arts of science and engineering. The bulk of the suitable material will be found among those who have adopted Service requirements as their career and turned scientist and engineer in pursuit of the accomplishment of their aims, rather than among scientists and engineers who have merely adapted their often very specialized scientific or engineering training. Exceptions there will be to this as to every other generalization, and some trained for more peaceful pursuits will find that their real bent lies in war. Knowledge of war must in the end be the criterion by which all is judged. *It is of the utmost importance that the*

fighting units of the Services should feel complete confidence in their technical staffs and should feel assured that the weapons which will be placed in their hands will be the best it is humanly possible to devise. In consequence, there will be more confidence in staffs who have had some experience of actual fighting themselves.

In organizing the training there is no need to attempt to make the student either a scientist or an engineer. He will not have to actually follow either of these professions. It must be the aim to teach him how to do so, but no man in one lifetime could expect to obtain all the practical experience to follow all the branches of both and at the same time obtain, if it proves practicable, actual experience of war. Above all, the training must be well balanced and as wide as possible without undue emphasis on one part or the omission of something because it has no immediate application.

The training necessary will take many years to perfect. It must not be supposed that it will be completed by attending a course, even if a long one. It must be recognized that it continues during subsequent employment, which must therefore be looked upon in this light and regulated with the idea of giving the staff officer all the experience possible in his work.

Having selected the best material and organized the best training possible, it must be realized that only a small proportion of the staff produced will prove themselves capable of such a task as that required. This, however, is no detriment to the organization. There must be constant sifting of the material, and those who do not show themselves possessed of the necessary balance and judgment will still be needed in the general scheme for employment on more specialized lines, since the organization, headed by a technical committee of the highest order which the whole system is primarily aimed to produce, must be built on very wide and reliable foundations.

Organization

The subject of the organization of such technical staffs is too large in itself to do more than attempt an outline. While research, design, experiment, production, inspection, issue and repair have all to be controlled, the network of technical establishments must be very large.

It is obvious, even from such a brief outline, that a very large number of technical establishments must be staffed and controlled, and that there must be very large permanent technical staffs employed under the direction of officers possessing the knowledge, the judgment and the foresight which can be acquired only by long training and a thorough understanding of war.

THE WORK OF THE WOMEN'S AUXILIARY AIR FORCE IN THE WAR

By Air Commandant K. J. Trefusis Forbes, C.B.E.

On Wednesday, 11th February, 1942

Air Marshal Sir Leslie Gossage, K.C.B., C.V.O., D.S.O., M.C., in the Chair.

The Chairman, on introducing the Lecturer, said that during the last war Air Commandant Trefusis Forbes was engaged in driving for certain voluntary organizations; subsequently she was Chief Cadet in the Women's Emergency Service—the only organization recognized by the War Office before this war for the production and training of future women officers. Later she became Chief Instructor of the A.T.S. School where officers destined for the R.A.F. Companies of the A.T.S. were trained. At this School practically all the present senior W.A.A.F. officers passed through her hands, and here, too, she worked under the direct influence of Dame Helen Gwynne Vaughan to whom we in the Royal Air Force owe a great debt of gratitude for the work she carried out in the last war.

During my time as Air Member for Personnel at the Air Ministry in 1940, Air Commandant Trefusis Forbes served under me as one of my Directors, and the foundations were then laid for the great development of the W.A.A.F. which has taken place since. My thanks are due to her for all the help she then gave me.

Apart from my association with the early development of the W.A.A.F., I have had the benefit of their services on a considerable scale practically ever since. When I was commanding No. 11 Group—part of the defence of London—my operations room was one of the first in which W.A.A.F. personnel were employed. The suggestion that women should be employed in this sort of work was first made to my knowledge about three years before the war started, and was then regarded as quite impossible. At that time the trade of plotting was looked upon as "black magic," upon which only the highest grade of Air Force clerk could be employed. About a year before this war we began taking on Volunteer Reserve plotters on a part-time basis, but still only men were employed; but once it had started women came to be employed in ever-increasing numbers. They showed a particular aptitude for the work and could do it admirably with only about a fortnight's training.

To-day I have the privilege of carrying out the scheme for what is possibly the largest employment of airwomen in the Royal Air Force, namely, as balloon operators. The fact that we have already over four thousand airwomen, either actually on balloon sites or in training, and that we have only just started on the job, will give you some idea of the magnitude of the task. These airwomen live in small communities of about twelve and are in absolute charge of their own balloon. This, in itself, is no mean achievement when one bears in mind the professions from which a large number of these airwomen are drawn. Amongst them is a high percentage of nursemaids, shop assistants, machinists and those previously in domestic service. My admiration is particularly extended to the W.A.A.F. N.C.Os. in charge of the balloon sites, who are responsible not only for the discipline and welfare of their crews, but also for maintaining and using efficiently the expensive and valuable pieces of equipment which a balloon, its winch and its associated gear constitute.

I have recently visited balloon sites in the North of England. There I found W.A.A.F. balloon crews thriving and getting on with their job, almost completely indifferent to the conditions of snow and ice about them.

Nevertheless, I cannot close my introductory remarks, which have been mainly about the W.A.A.F. balloon operators, without paying tribute to the airmen who did

the preliminary work in the Balloon Barrage, particularly the officers and men in the Auxiliary Air Force of which the Command was originally composed. It was only through their efforts in overcoming initial difficulties that balloon handling has been simplified and made possible for women. Now we have warm and comfortable huts on all the balloon sites, and most of the sites have been adopted by local residents who ask the airwomen in during their time off, and arrange for them to have baths and so on; but the airmen who were out with the barrage during the winter of 1939 had very few amenities of that nature and had a very tough time.

In concluding these remarks may I, on behalf of the Royal Air Force, say how much we welcome and admire our W.A.A.F. for all the help and support they are giving us, for their comradeship and for their invariable cheerfulness in overcoming such difficulties as they have had to meet.

LECTURE

IT is difficult to know where to start in telling you about the Women's Auxiliary Air Force but, perhaps, I had better begin by telling you how it came to be part of the Royal Air Force.

First, I must remind you very briefly of the constitution of the R.A.F. It is organized on a functional and not on a territorial basis, and in this respect is very different from the Army which is mainly organized in geographical groupings, *i.e.*, Northern Command or Southern Command. In the Air Force the chief operational Commands, such as Bomber Command or Fighter Command, are spread all over the country, and each Command is organized in Groups which are also functional and not regional, and each Group has within it a number of stations extending from North to South and East to West of Great Britain.

On 27th September, 1938, the A.T.S. was formed. The R.A.F. companies followed a month later—in October. These companies were formed under the jurisdiction of the Territorial Army and Air Force Associations and consisted of drivers only. They were organized on a regional basis and were administered through their own officers by the Country Commandants of the A.T.S.

Shortly after their formation the R.A.F. companies of the A.T.S. were expanded to include five trades: drivers, cooks, clerks, equipment assistants, and orderlies. A year later, on 28th June, 1939, the King, by Royal Warrant, approved the formation of the Women's Auxiliary Air Force as a separate organization. The original R.A.F. companies of the A.T.S. formed the nucleus, but they were still administered by the A.T.S. commandants on the old territorial basis. On 24th August, 1939, a radical change was made, and the W.A.A.F. was reorganized on a functional basis with an establishment drawn up to allow for the substitution of airwomen in place of airmen in the R.A.F. For the first time the W.A.A.F. was being definitely considered as part of the Royal Air Force.

On 28th August, 1939, the W.A.A.F. was mobilized; but there were still only five trades. The first signs of any extension came from the Signals branch who maintained that they could employ W.A.A.F. teleprinter operators. Twenty clerks were accordingly chosen, re-mustered and trained for those duties. They formed the first foundations of the present large body of W.A.A.F. Signals personnel. Almost at the same time women were accepted as plotters in operations rooms.

Next came the question of radiolocation. The R.A.F. said that women would be good at it and women they would have. It was indeed a startling development to have women responsible for so much, but the R.A.F. accepted them as a matter of course.

All sorts of recruits applied, and large queues formed daily in Kingsway. In addition, we received innumerable applications by post. During the winter of 1939/40 the W.A.A.F. were often short of uniform and other equipment, and their strength of character was often tried severely during this, the coldest winter for forty years; but whatever they lacked it was not "guts." They served on many stations under very trying conditions, and you can imagine the many and varied problems which had to be solved. Many a station commander was perplexed by the invasion of his station by women, but not least perhaps the station commander who had a W.A.A.F. cook on his station, paid at 1s. 4d. a day, who asked for an interview with the station commander. This was granted. "I wish," said the airwoman cook, "to bring my two hunters to the station." As the airwomen proved their worth, trade after trade was opened to them, and in each one the R.A.F. accepted them with implicit faith in their ability to make a success of it. Balloon fabric workers, telephone operators, pay clerks—all were proud of this faith in them and strove to justify it. W.A.A.F. officers too were entering new branches, becoming Code and Cypher Officers, Equipment Officers, Catering Officers, etc.

By April, 1940, a radical change had occurred. Uniforms had come through, establishments had been settled, the ranks of officers and N.C.Os. brought into line with the R.A.F. The policy of the W.A.A.F. Administrative Branch had been formed and agreed to by the Air Council. The W.A.A.F., in fact, was substituting for the R.A.F. From the outset we had been paid the great compliment of being given the same badges of rank and the same uniform as the R.A.F. We were serving under the same conditions with the same equipment, passing through the same tests, being reclassified and remustered in the same way as the ground staff of the R.A.F. In fact, the full foundation of the W.A.A.F. as an integral part of the R.A.F. was laid.

Nevertheless, we had not yet faced enemy action. I do not want to go into details about the Battle of Britain, but I would remind you that only a year after airwomen had first been accepted in operations rooms they were given very great responsibilities, and the efficiency of our fighter force depended to a large extent on their coolness and reliability. It was then that the C. in C. of Fighter Command sent a message to the W.A.A.F. on several of these operational stations in which he said: "My confidence is abundantly justified."

During the period of the Battle of Britain, all trades of the W.A.A.F. played their part. No small credit is due, for instance, to the cooks whose task has often been dull, but who have never failed to serve something hot even when their cook-houses have been damaged by enemy action. It is just when things are at their worst, as you know, that a hot meal is so cheering; and the cooks have responded nobly to the demands made on them.

I do not think I have given a very good idea of how the Royal Air Force, which, as you know, is expanding very rapidly, has coped with the expansion of the W.A.A.F., but these facts stand out very clearly. In September, 1939, we had five trades, we now have over fifty. This expansion has not been easy. It has meant a lot of training and a good deal of experiment. One could not, for instance, be sure beforehand that airwomen would be successful as flight mechanics, and yet when the first experiment was tried with an equal number of men and women, the first four were women. In fairness, I must add that the last were also women! It is interesting to note that the airwoman who passed out top had been, until she became a flight mechanic, a silk textile weaver. In addition to flight mechanics we have cine-

operators, instrument mechanics, electricians, wireless operators, Morse slip readers, photographers, M.T. mechanics, radio telephonists and many others.

To-day we are over fifty times the strength we were in September, 1939. This, is, I think, the biggest expansion of any service over so short a period and we are now the largest of the women's services. This expansion has called for a large amount of organization on the part of the Air Ministry. It is not easy to equip so many women as well as the W.A.A.F. is equipped, in the space of a few months. I wonder whether the Contracts Department would have believed a few months ago that they were going to be involved in providing so many thousands of pairs of grey stockings, for example.

There are, of course, very many varied problems to be solved before airwomen can be substituted for airmen. The Medical branch, the Establishment branch and many other branches have to decide the ratio of substitution, and whether one airwoman can be a substitute for one airman or whether two are needed. In fact, of course, there are very few trades in which women substitutes exceed the numbers of men they replace.

On the accommodation side also there have been many problems to be solved —showers, for instance, have had to be altered so that women, with their longer hair, do not get it wet, and you can imagine for yourselves that there have been many similar difficulties.

But in spite of the difficulties, the W.A.A.F. has continued to grow and has become, we are proud to say, more and more an integral part of the Royal Air Force. There is, however, one great difference between the W.A.A.F. and the R.A.F.: although airwomen are being substituted for airmen and W.A.A.F. officers for R.A.F. officers, they have their own administrative branch. This is based on the experience gained in the last war in the W.R.A.F. It was then agreed that women officers must officer women. This principle was followed when the W.A.A.F. was formed in 1939 and has been adhered to ever since. The Royal Air Force think highly of our administrative branch, or W.A.A.F. (G) Branch as it is now called, and give great weight to the advice of the officers and airwomen in it. Thus we find W.A.A.F. officers and airwomen on the various R.A.F. stations all over Great Britain, but at each formation—*i.e.*, at each Station, Group, Command, and at the Air Ministry—there are W.A.A.F. (G) officers who are responsible to the senior R.A.F. officer at the respective formations for the welfare, well-being and discipline of all W.A.A.F. ranks within that formation. It was in April, 1940, that this policy was brought up to date by the Air Council and the W.A.A.F. (G) Branch thoroughly launched in its progress. In spite of this one difference we in the W.A.A.F. consider that we are part of the R.A.F., and we are proud to know that the Royal Air Force think so, too. The R.A.F. have demanded much of us, as they have of themselves during many difficult months, under difficult conditions in difficult places; but whatever the future holds we will face it proudly and gladly with them.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

JAPAN'S MERCHANT SHIPPING

By E. SPEYER

JAPAN has always been a nation of fishermen who ventured far from their native islands. It is, therefore, little surprising that once contact with the outside world was made the importance of shipping was soon recognized. The first shipyard was built in 1854. Foreign shipbuilders were enticed by high salaries to come to Japan, and within a very short period she possessed an important shipbuilding industry. As Japanese had continuously been sent abroad to study shipbuilding in Europe and America, foreign instructors at home could gradually be dispensed with. Shipbuilding and shipping enterprises were favoured and protected by legislation as early as 1895, such legislation being revised from time to time according to what was considered to be in the national interest, until both industries became entirely government-controlled in 1939/40.

Already in 1914, Japan possessed the sixth largest merchant fleet in the world (about 1,700,000 gross tons), after the British Empire (20,500,000 tons), Germany, U.S.A., Norway and France. Since then she has reached third place (in 1939, 5,630,000 gross tons), after the Empire with 21,000,000 and the U.S.A. with about 9,000,000 ocean-going gross tonnage. These figures relate to registered steamers and motorships only. To them must be added about 1,560,000 gross tons of registered and unregistered sailing and 40,000 tons of unregistered steam vessels; furthermore, in order to come to a total figure for the date of Japan's entry into the War, new tonnage built or acquired since 1939, accounting probably for another 350,000 gross tons, has to be added. Altogether, the Japanese merchant navy on the eve of the outbreak of the Far-Eastern war was probably about 7,500,000 gross tons. Since then she must have suffered not inconsiderable losses which, however, for a large part may have been offset by seizures, requisitions, and purchases in French Indo-China, Thailand and Chinese waters. Some Axis shipping, previously tied up in Eastern ports, may also be operated now by the Japanese.

From the point of view of age the state of the Japanese commercial fleet is not bad. In 1938, out of a total of about 4,600,000 tons of steamships of over 1,000 tons, 1,200,000 tons, or 27.5 per cent., were less than 5 years old, while another 500,000 tons, or 10.6 per cent., were 5–9 years old.[1]

In speed, too, Japan's merchant navy compares not unfavourably with the other seafaring nations. Of 4,000,000 tons of steamships of over 1,000 tons displacement, in 1937, 361 vessels of 1,050,000 tons had a speed of 10–13 knots, 353 of 1,700,000 tons 13–16 knots, and 144 of 1,025,000 tons 16–20 knots. Since 1937, Japan has turned out some very fast ships, among which are big liners destined for the American and European services which are now probably used as troop transport ships and auxiliary cruisers.

According to the *Frankfurter Zeitung* of 4th February, 1941, Japan possessed in June, 1940, 38 ships of over 10,000 tons (against only 28 in 1938), 885 ships between 2,000 and 10,000 tons, whereof about 25 per cent. were over 6,000 tons, 50 per cent. between 3,000 and 6,000 tons, and the remaining 25 per cent. between 2,000

[1] For purposes of comparison: at the same time 19.8 per cent. of the British Empire merchant fleet was below the age of 5 years and 14.1 per cent. between 5–9 years, the corresponding figures for the U.S.A. being only 5.1 per cent. below 5 years and 4.8 per cent. between 5–9 years.

and 3,000 tons. Of smaller ships, she possessed between 400 and 500 of 500–2,000 tons, 700 and 800 between 100–500 tons, and approximately 2,000 below 100 tons. In addition to these steam and motor vessels, she possessed nearly 17,000 sailing vessels, of which 14,000 were between 20 and 100 tons.

At the beginning of 1940, about 9.6 per cent. of all Japanese steam and motor vessels were tankers of an average capacity of 10–12,000 tons and a speed of 16–20 knots. From the point of view of their adaptability to naval purposes, the large whaling depot ships are important, as they can easily be converted into tankers or seaplane tenders. Cargo ships were, since 1939, mainly built according to standard types of 4,470, 6,200 or 6,300 gross tons for Ocean transportation, and 490, 850, 1,990 and 2,750 gross tons for Near Sea transportation.

In this connection, it might be interesting to note something about the navigation zones which were defined in Japan by law. There are four different zones to which the corresponding classes of ships are being assigned; they are:

Zone.	*Corresponding class of ships.*
Overseas	First-class ships.
Near Sea	Second-class ships.
Coastwise	Third-class ships.
Calm water	Fourth-class ships.

Over 75 per cent. of the total Japanese shipping space was assigned to the Oversea zone, about 20 per cent. to the Near Sea zone, and only about 3 per cent. to the Coastwise and Calm water zones. Thus, by far the largest proportion is suitable for external transport. It can be assumed that, theoretically, 5,500,000 tons can be used for that purpose. From this figure should be deducted about 500,000 tons in repair at any given time, leaving roughly 5,000,000 tons. Trade requirements inside the area which forms the enlarged "co-prosperity sphere" (including Manchukuo, China, Indo-China, Thailand, the Philippines, N.E.I. and Malaya) were in December, 1940, about 3,400,000 tons, and may be now some 3,000,000 tons. This would mean that about 2,000,000 tons can be employed for actual war transport purposes.

What are Japan's resources for new construction? Can she replace her losses? Can she increase her shipping space? New construction amounted in 1937 to 450,000 tons, in 1938 to 470,000 tons, and in 1939 to 400,000 tons. The net increase in tonnage (as old ships have to be broken up) was however much less, and amounted to only about 160,000 tons (motor and steam vessels) between June, 1939, and June, 1940. Therefore, even if Japan's building capacity should be a little higher—say half a million tons, which is very doubtful, and even if she can build some vessels at Hongkong and at Singapore, it does not seem likely that she can replace the losses she is suffering through allied action, while allied attacks upon her shipping will increase as time goes on.

Apart from such factors as naval requirements, which are bound to increase after the recent severe losses suffered by the Japanese navy and which will have priority above all other claims on shipbuilding yards, the shortage of raw materials needed for the construction of ships, already stringent when Japan became a belligerent, must make itself more and more felt. It is, therefore, not surprising that the building of wooden ships is under consideration. It looks as if the Japanese under no circumstances will be able to raise the average tonnage available for military transportation beyond 2,000,000 gross tons, and with the Allied attacks becoming fiercer it may soon be less.

Although it is extremely difficult to assess Japan's present commercial shipping needs correctly,[2] it can safely be said that her internal needs will not allow any reduction of imports as she continues to need sugar from Formosa, and other foodstuffs, such as rice, beans and peas, from other parts of the "larger co-prosperity sphere," oil from Borneo and Dutch East India (provided she can get the wells working again), tin and rubber from Malaya, Thailand, French Indo-China, and the Dutch East Indies; copper from the Philippines, iron ore, bauxite and other raw materials wherever she can lay hands on them. Even if she can transport some of these commodities in vessels which return from the carrying of troops and war materials to the theatres of war, this will not alleviate her position sufficiently to allow her to divert cargo ships from trade to military purposes without endangering the supply of her war industries and her most urgent civilian requirements. Japan will certainly be in no position to make use to a larger extent of the natural riches of the newly conquered territories, which means that she will not be able to increase her production of war materials. Her production of such materials will, at its best, remain stationary at pre-war level as long as neither her shipping, nor her ports, nor her industrial plants, are really hard hit by the Allies. Large scale destruction of any one of these facilities would mean, in view of their irreplaceability during the war, a decisive decrease of her industrial output.

Shipping is the most vulnerable point of Japan, as long as large-scale attacks on the country itself cannot be executed. Her vessels can be attacked in the waters of Malaya and in the Pacific archipelagos. A large part of Dutch East India, the Philippines, and the Palau archipelagos are within a range of about 1,000 miles from Port Darwin and, therefore, well within the reach of Australia-based bombers and submarines. An attack upon shipping between Japan and the mainland of Asia is more difficult, but does not seem impossible for bombers based on China and the Aleutians, and for submarines hunting from places as distant as Australia and Dutch Harbour. If the Allies can destroy only one million tons of Japanese ships this year, the Japanese octopus must relax its hold on the South Eastern Pacific never to regain it. Attack on Japan herself will follow.

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[2] Japanese Government circles indicate their merchant fleet requirements for the greater "co-prosperity sphere" including India and Australia, at 15,000,000 gross tons, which amount forms the goal of a new construction plan made in 1941; and the President of the N.Y.K.—the most important Japanese shipping company, even indicated the needs for post-war period at 20,000,000 gross tons.

SOME FACTORS AFFECTING MILITARY MORALE

By Major Frederic Evans, M.B.E.

In Total War, psychological factors are of equal importance to the material means and physical efforts required to wage the struggle. Morale is a condition which we ignore at our peril. With the colossal armies now engaged, the final victory will come, not when the forces of the enemy are totally destroyed, but when defeat and disillusion produce in them the mentality of futility and of failure.

This factor in defeat or in victory—that of morale—must be consciously made sound and steadfast if it is to mean victory for our cause. With ample production of the necessary implements of war, with the provision of well-trained man-power, psychological preparation must go on, equally persistently and equally thoroughly. Men, Munitions and Morale are the three legs of the tripod which supports the war effort.

To-day we have a citizen army, and the background of our fighting men is the background of our people as a whole. Our consideration of the psychology of the soldier must therefore be made with that background clearly in our minds. What is this background in respect of attitudes to world affairs? It is, I think, a composite of disillusion in world co-operation, as so far achieved, and a yearning for a great world purpose for all humanity. The generation of young people who form the bulk of our forces were brought up in an atmosphere of belief in the possibilities of a League of Nations to keep the peace. It is not their fault that Article XVI of the Covenant, which provided for armed forces from the covenanting nations to prevent aggression, was never implemented.

The Peace Ballot of 1935 showed how strongly a belief in co-operation to keep the peace was held by adults in this country. In that ballot was also shown a widespread conviction that the use of force for such a purpose would receive the support of public opinion. Most of the schools of Britain, since 1920, had included instruction on these ideas of collective security in their curricula, and investigations showed how deeply these conceptions had become part of the mental make-up of the children.

While young opinion was nurtured on ideas of world co-operation against aggressive and predatory Powers, statesmen paid lip-service to the League but gave it no teeth. Litvinov pleaded in vain that peace was indivisible. There were pious resolutions but no iron resolution. Our armed forces were reduced both in strength and in the scale of their armaments when they should have been maintained at a high standard to discharge our obligations under the Covenant of the League. The Geneva Protocol to implement Article XVI was supported neither by the Labour Government of 1924 nor the Conservative Government of 1925. And what was worse, the predatory Powers were allowed to re-arm to a stage quite inconsistent with anything other than the use of these arms in aggression.

Munich came to shock the younger generation out of complacent belief in the reality of collective security. Keener observers had seen the challenge in Japanese aggression in Manchuria and China and in Italian defiance of the League in her attack upon Ethiopia. The first reaction was disillusion in the beliefs which had

been fashionable from 1920 to 1938. The opportunity for a translation of covenants into collective force had passed. Britain faced the Nazi menace almost alone. France was half-hearted and divided.

But that background of idealism, of world co-operation for keeping the peace, though at first disillusioned, has given that staying power, that sense of crusading, which sustained Britain in her hour of trial in 1940 when she stood alone. That is the purpose in our war aims. That is the spirit of the great Atlantic Charter. And at long last, collective security is, in reality, being slowly and painfully built up. Around the bastion, which is Britain, the forces of world decency have crystallized. The new League of Nations, embodying force to ensure world law, is in being.

I have tried to analyse in some detail this essential basis of British morale because it is necessary to understand it in terms of mass psychology. To inspire our crusade we must have an idea which is stronger, more lasting and more persistent than the clap-trap of a New Order for *Herrenvolk* and their slave nations can ever be.

Jung has discussed the urge of mass psychology in great human movements. Napoleon realized it in his dictum that the moral is to the physical as three to one. The armies of the Allies in this third great struggle against the idea of world conquest have, ready-made, the ideal to carry them through. In our training of these armies we must foster in them this crusading spirit by constant instruction in the meaning of the struggle in terms of world ideas. Collective use of force to keep the peace, collective well-being, collective security, these are the aims with which we must unceasingly inspire the new armies of world democracy.

In our direction of the mass psychology of our fighting men, this inspirational work should take first place. It must be done with sincerity and earnestness. We have, in the war aims of the Allies, the background of the belief in world co-operation to wage war against aggression. Crystallized, these ideas are world-shaking and undying. They are true, in their particular sense, of all the countries joined in the fight against the cynical Nazi creed. We ought to harness them all into one concise battle cry, rallying all that is decent in humanity to our cause.

It is for this reason that I believe the constant proclamation of our war aims in clear-cut and unequivocal terms to be necessary even at this stage in the War. War aims to which all decent folk can subscribe are, as I have tried to show, as essential to the war effort as drives for production and the building up of the striking power of large land, sea and air forces. It is not enough to say we must win the war first and talk ideals afterwards. The ideals or aims are, inexorably, part of the war effort in total war.

The need for a crusading war aim is also apparent in combating the propaganda of the enemy. Troops not imbued with this crusading spirit fall an easy prey to insidious whispering compaigns or plausible leaflets. France was first made rotten with defeatist ideas before she was attacked. The troops of the Russian Revolution, fired with an enthusiasm in their cause, have performed prodigious feats of valour. There appear to be no Russian quislings, because the Red Army and the Russian people were thoroughly prepared, psychologically, to withstand the attack of the invader.

In this inspirational work the publications of the Army Bureau of Current Affairs are admirable. But we need a simple gospel to express, as it were, the military religion for all crusaders in the fight for world freedom, world well-being and

world decency. The Atlantic Charter, simplified and condensed, would form an admirable basis for this *credo* of the armies of democracy.

I feel that parallel with practical training this emotional education should go on unceasingly, consciously and sincerely. Its absence in most units is a cause for concern to those who realize the psychological implications of the war. This cultivation of a burning urge to defeat the enemies of civilization should form a major part in our training programmes and not be tacked on, as an extra, to the tail end of a busy day's activity with material things. Our cause, being based upon human values which mankind everywhere with a great yearning longs to attain, has the quality of resilience and of endurance. It can and should create a morale which nothing baser can ever shake. Are we doing all in our power to produce this psychology in our fighting men ?

So much for general conceptions. There are then to be considered the psychological problems of individual soldiers as contrasted with their mass psychology. All leaders should have some conception of the individual make-up of the men if their leadership is to be not only inspiring but understanding. There is, first, the need that the leaders should be *in loco parentis* to their men. This attitude is important not only because it ensures, as far as is possible in war, the well-being, health and fitness of the troops, but because it recognizes a basic need deep in the subconscious mind of every human being. To the young child, the father is all knowing, all powerful, all beneficent. To most people the need to lean upon a father of some kind is fundamental. It explains the power of the dictator, it is the origin of the patron saint, it lies beneath the conception of the Fatherland. To the young soldier, especially, this subconscious son-and-father relationship is essential if he is to be sustained in the trials and struggles of modern war.

The leaders, therefore, should know their men and be interested in them as individuals. They should help them in their troubles and get them to talk about their problems. An enquiry about how they got on during their leave, how the new baby is doing or if the old man is better, will do much to forge this parent-child link which is a basic relationship in human affairs. That does not mean being soft and namby-pamby. When the supreme emergency comes and men are told that they have to hold a post to the death, it will come best from someone who has fathered them and who will remain with them to the last. This bond is vital in the best leadership of men. It is tacitly implied in the regulations or traditions concerned with the management of men.

Adler emphasizes, quite rightly, the importance of the sense of self-esteem in matters of human conduct. No man likes to feel himself inferior in any relationship or in any situation. If life has developed in him a sense of inferiority, he may express it either in an exaggerated effort to appear superior or in an attitude in which initiative and pride in self are absent. Both these manifestations are bad for soldiers. The former may lead to almost inexplicable breaches of discipline or of delinquence and the latter to a dull condition of inferiority which will be ready to accept domination from wherever it comes—from friend or from enemy.

What we must aim at is the development of individual self-esteem to produce a self-respect and a standard of behaviour consistent with an army of proud crusaders in a great cause. The standards of courage in our fighting forces have become realities in so far as this self-respect has become identified with conceptions of bravery in the face of the enemy. Undoubtedly the individual man, apart from his social consciousness as a member of an army, would flee from the wrath of the

enemy. It is the realization that to do this would bring upon him the contempt of his fellows and will " let them down " which supports him in his inhibition of the primitive urge to seek his own safety.

Therefore, in our training we must be careful not to damage these individual feelings of self-esteem. They must be used to make men into good soldiers rather than bullied out of them to make resentful robots. While orders must be definite, incisive and unequivocal, they should, nevertheless, carry an implication of the fact that those ordered are, as it were, knights in armour and members of the fraternity of crusaders for humanity. Recruits should not have their self-pride and individuality badgered out of them. They should be brought into the Army as members of a great communal organization acting for a great purpose. The inculcation of this inward spirit is vastly more important than the development of an orthodoxy of drills, however superficially perfect, imposed from outside. The drills must be realized as part of the essential preparation for the hard struggle which lies ahead.

This brings us to the point where some reference may be made to discipline in general. Good discipline is inherent in the maintenance of a high morale among troops. In all collective action it is necessary to have a basic structure of discipline wherein individual tendencies are organized to act in unity and for the general good. The aim will be to weld individuals into a group imbued with the same aims and trained to act as a team in response to commands. At the same time individual values have to be recognized and initiative encouraged so long as they operate in the interests of the group. " Comrades in arms," perhaps expresses this idea best.

Military discipline, or any communal discipline, must be founded upon goodwill and in the voluntary subjection of individual tendencies to the achievement of the common aim. Thus, under the inspiration of a great crusading urge, this voluntary subjection to discipline and the arousing of enthusiasm in training can be accomplished even among men accustomed to take only an individualist point of view. Outward and visible discipline can thus be the expression of an inward and spiritual purpose.

In spite of high purpose, however, delinquencies will occur. It is human to err. But such delinquencies are less likely to be fundamentally serious than those occurring among men disciplined only through a rigid outward control. Petty punishments in large numbers are seldom effective and tend to produce discontent. It is better to apply the first offender principle and to award fewer punishments of greater severity to troops who do not respond to considerate treatment. Few and stiff, rather than many and small, should describe punishments in the Army. Officers and non-commissioned officers alike should remember that their efficiency is not reflected in the number of men they " crime," but in their capacity to lead willing men as co-operators in a great cause. This should not mean softness in discipline. Orders, when given, must be obeyed with alacrity; but much depends upon how they are given and the qualities of the leaders giving them. Good discipline cuts both ways. It imposes an obligation upon those ordered and also calls for skill, judgment and efficiency in those who give the orders.

When in contact with the enemy, especially for the first time, fear reactions are certain to be felt by most soldiers. This is quite natural and does not necessarily represent a condition which need reduce their fighting efficiency. With the right mass psychology, the social consciousness of the Army that it must stand together

to meet the foe will sustain the fighting community. Its standards will be clearly sensed by all who have been well trained.

Nevertheless, something must be done to take the first shock of the fear reaction. The best antidote to fear is action—a job to do—preferably in connection with the work of defence or attack. If troops have to withstand passively the pounding of the enemy, they are more likely to be unnerved by it than if they are actively engaged in doing something to prepare them to hit back. This is where good leadership will come in. If an objective is to be gained, then active conference over the methods to be followed will be invaluable. Concealment, the use of cover, the use of tricks to deceive the enemy, the study of the land ahead by patrols, wiring, digging of strong points, rifle pits or slit trenches, the cooking of food or the making of hot drinks if this is possible, the study of maps—these and similar activities will keep the men's minds positively engaged in devising ways and means of surmounting the problem before them. In this war more than in any other, the individual soldier has opportunity of showing initiative and even qualities of leadership. Always should it be remembered that action is the best antidote to fear. But this action must obviously be concerned with the movements in hand.

In these preparations, the officers should take a full part. Example is better than precept. So long as he does not prejudice his position of command, the more the officer will do with his men in these circumstances the better. "I will have the gentlemen to haul and draw with the mariners," said Sir Francis Drake. Nothing strengthens the father/son link between an officer and his men more than his complete identification with them in times of stress. This will add to his standing and his powers of leadership with the men rather than reduce them. In these active measures officers can demonstrate, as they can in no other way, their powers of leadership. Leadership in action rather than in words is always more effective and more real.

During training some men will develop certain morbid psychological conditions. They will be comparatively few in number, but they must be dealt with intelligently to prevent them becoming centres of discontent or depression. There are, in every Command, psychologists specially trained to assist with such cases, and their advice should always be sought by the medical officer. In this way, also, early knowledge can be secured of psychological trends among worried individuals and to some extent in the communities of soldiers.

Malaise, ennui, boredom—call it what you will—is, in war, an important cause of reduced efficiency and drive among soldiers. Here, again, action is the remedy. But the action, after the necessary standards in routine have been attained, must provide variety and development. Repetition in what is already thoroughly known will increase boredom rather than reduce it. New applications of the acquired skills and knowledge are, however, a different matter. The skilful leader will devise new applications and new co-ordinations of the skills acquired in training. In activities of this kind the precept of the lecture or the demonstration can be activated until it becomes part and parcel of the mental and physical make-up of the participants.

Leisure hours must be provided for, not only for reasons of war boredom but to occupy the bodies and minds of the men in social rather than anti-social practices. It has been shown how well-organized facilities to provide for the leisure hours of the soldier have resulted in great reductions in convictions for drunkenness and in the incidence of venereal diseases.

One further word about training. This must be a matter more of action than of words, of things handled rather than of technical terms only half understood. The lecture must be subordinate to the actual thing. Demonstration and handling, doing and being are fundamental in the training of the soldier. This is a war of machines. The soldier must learn to be at ease with the machine he handles. In the tension of action against the enemy, his confidence in his machine—be it aircraft, ship, gun, tank, lorry or rifle—will engender confidence in himself. We want less barrack square gyrations and more training with the weapons of war themselves. Men are intensely interested in mechanical things. Our training should utilize this interest to the full and be based upon it rather than adventitious to it.

In such training much more must be done to accustom the soldier to the crash of noises inseparable from a modern battle. Clearly our new armies must become inured to noise. Their pre-occupations with their machines or in purposeful activity will go a long way towards preventing the thunder of war from breaking down their nerves.

The soldier must not be encouraged to indulge in introspection. He must be directed towards extrovert things. He must be helped to acquire a philosophy that sufficient unto the day is the evil thereof. He must, in his own consciousness, live from day to day rather than, in anticipation, die a thousand deaths. Everything possible to develop the soldier's extrovert expressions should be done. This is the safety valve through which his fears and anxieties can escape.

These few remarks by no means exhaust the subject of the psychology of the soldier. Much could be said of the dangers of so-called " shell-shock " in troops subjected to enemy attack. This should never be recognized in official speech, as it is a condition one may almost describe as contagious. Investigations made in the last war showed that real shell-shock was very rare and that usually it was induced in the soldier to excuse, in his own conscience, his unwillingness to face the enemy. When officers realized the simple psychology of so-called shell-shock, these conversions of quite natural fears into physical manifestations became much less frequent.

But perhaps enough has been said in this article to indicate the main trends which our training should take to meet the menace of psychology conditioned for conquest and oppression. Against the ideas represented by the Nazi creed we must pit a sublime crusading chivalry which will create an enthusiasm and a drive to outlast the baser instincts of the enemy. We can only do this if we build upon the personalities of our men as we find them. We cannot do it if we attempt to impose upon them a new orthodoxy contrary to the natures of free Britons and free men everywhere.

FIGHTING RACES OF THE GULF OF ADEN

By Major The Hon. R. A. B. Hamilton

WITH a long war in prospect, and a longer period of armed police work after the War, it is worth reviewing the vast areas under our control, or those with people friendly to us, in the tropics for the man-power which will be required. There we have it on a large scale ; much is of excellent material, and little is, as yet, tapped. Fighting races abound in our Colonial Empire and among such small neutral neighbours as are left ; but this article will be confined to three races of the Gulf of Aden area and their possibilities as soldiers or as police and labour corps. These three races are the Yemeni, the Arab of the British Protectorate or Mushreqi, and the Somali.

The Yemeni nation is neutral. They are the subjects of H.M. the King of Yemen (the Imam), but many of them emigrate to seek work and military service : they are to be found as merchant seamen as far afield as Cardiff and Sheffield, and large numbers enlisted in the Italian forces, particularly during 1936 and 1937.

The other two races are under the protection of H.M. Government ; but, while Somaliland is an administered territory, the tribes of the Aden hinterland are independent and unadministered.

The Yemeni

The Yemeni's own country is rugged and mountainous. His forts and villages are well built and well sited for defence. His tactics are those of a mountain race armed with rifles. His one native assault weapon is a dagger, and, consequently, he does not seek hand-to-hand conflict. He is manifestly miserable outside a fort at night. In their many incursions into the territories of our tribes in the Protectorate the Yemenis showed an inability to move or fight after dark, lighting fires and calling one to another to keep their spirits up. They bunch together and make the absurd mistake of seeking high ground, entirely a result of lack of training and of a desire for fortified cover. There is little doubt that the fort and the rifle have reduced their fighting powers considerably in the last century.

But it is the fighting qualities of the Yemenis when they enlist as soldiers of fortune, rather than those they display or lack in their own country, which are of interest. The Italians should know them best. They did not absolutely trust the Somalis, so enlisted Yemenis in their Colonial forces, and this mixed force of Somalis and Yemenis formed the Somali-Arab corps which opposed Wehib Pasha on the southern Abyssinian front in 1937. It was not easy to find out much about them from the Italians except that they were " satisfactory." They did not mix well with the Somalis, but this was an advantage from the Italian officers' point of view. Both Italians and Yemenis were in a strange land, and it was to the advantage of both to hang together. Few seemed to have reached high native rank.

Wehib Pasha admired the dash with which the Somali-Arab corps attacked. But, in the light of subsequent knowledge, he may well have been misled and have confused the surprising tactics of the " Banda " or Somali irregulars (who invariably formed the spear-head of southern Italian columns) with the Colonial troops.

It is, to those who know him, difficult to imagine a Yemeni at home in bush country. Fort dwellers, used to the untidy midden of crowded villages, they do not make clean soldiers. They are not happy in desert countries and, when travelling, drink too copiously.

On the whole, they are not good material as fighting men, although there is little doubt that those who leave the Yemen in search of service give their loyalty where they find employment and are true mercenaries. It is in coolie-work that the Yemenis' best qualities find expression. They are, as anyone who has watched them unloading cargo in Port Sudan will know, cheerful and tireless workers. Poor men in their own country, they subsist on little. They work with amazing speed and endurance. In this respect their capacity for work is a national characteristic, and this capacity varies little between tribe and tribe.

They are a highly intelligent race, with a strong sense of humour. It is perhaps these qualities of intelligence and humour which combine to make them excellent hospital patients, no inconsiderable quality in a labour corps! While understanding the dangers of epidemic disease, they do not panic, and they resist disease in a remarkable way. Nor are they averse to medical attention or to such preventive measures as inoculation and vaccination.

To sum up, the Yemeni is a good coolie. He is not ideal material for military forces and, in any case, the Yemen is a neutral country.

The Protectorate Arab

About one-third of the Arabs of the British Protectorate—those in the West—are of Yemeni type. East and North of these are the wilder tribes, who describe themselves as Mushreqi, or "Easterners." These are without a doubt fine fighting men, in particular the Aulaqi and their dependents, the Eastern Audhali, and other similar neighbouring tribes. They inhabit the area which lies about a hundred miles North-East of Aden to the borders of the Eastern Protectorate.

Somewhat fanatical and fiercely opposed to all foreign intrusion, they live in a continual state of war. As tough as the Yemeni in resistance to disease, they far exceed him in endurance. They have all the qualities of good soldiers but one—they do not seek active service outside Arabia. This is not altogether strange. The number of Europeans who have made journeys of any extent through their territory can be counted on the fingers of one hand. And those did not go there with the object of encouraging emigration. Local forces in Aden have attracted them because of comfortable living conditions and good pay; but these forces have been used only in Aden, and it has not been the policy to allow them to undertake active service beyond the foothills of the North. An irregular force under direct political control has seen considerable service throughout the Western Protectorate, but it is small in number and has never undertaken operations of any size. It seems that, on the whole, they like service in the Colony because of its many personal advantages to them—a comparatively peaceful existence, well-fed and clothed, honourable work which is well paid—but draw the line at service over-seas.

Most people who know them at all are of the opinion that this reluctance to leave close contact with their own land could be overcome by propaganda and the establishment of a tribal "bank" and regular postal facilities. The main object would be to remove the picture of a "sea barrier" from the tribesman's mind and to

assure him of being able to send his money home and to have periods of leave in his own country. Once this barrier was removed, four battalions of excellent fighting men could be enlisted without difficulty and without affecting the enlistment of men for local forces within the Colony. Replacements would also be available. It is doubtful if more than four battalions could be found.

The Somali

It will seem strange to some to bracket the Somali with the two types of Arab mentioned above. But it is useful to do so, if only for the contrast. The Somali country has long been split up under British, French, Italian and Abyssinian administrations. The Somalis are, however, a numerous and powerful nation. Once or twice in their long history they have combined and moved as a nation and, in the XVIth Century, they conquered a large part of Abyssinia. But they are true nomads and, consequently, find combination and national self-expression difficult.

A glance at the map will show the extent of their borders. From the Juba River to Wal-Wal and Harar and to the sea by Jibuti, the whole vast area of the horn of Africa, a wild and mountainous land of bush and dry flood courses in which they graze their great herds of camels and pasture their famous black-faced sheep.

The Somali is one of the great races of Africa. Nilotic in origin, he compares well with the Zulu, the Masai and other famous African fighting men. It is many hundreds of years since they swept down from the North, subjugated the Midgan and the Yibr bushmen, and took this country for their own. Their origins are lost and confused by claims of Arab descent, but few people who have lived among them are not impressed by their firmly-established national characteristics. Like all native races who prize their liberty and independence, and who are aware of their personal courage and intelligence, they are misunderstood by Europeans used to regard the coloured races as servile. Unfortunately, such Europeans are many in number. The Somali is a reserved man of considerable natural dignity. Somewhat fanatical, rigorous in his observance of a strong moral code, he is not misled by clothes or riches and is quick to judge foreigners and more inclined to despise than to praise. I once heard a doctor say : " These Somalis seem to think they're the cat's whiskers—and, after four years, I'm beginning to believe they're right." But once their confidence has been won, they are faithful friends.

Their military qualities are outstanding, although they react best to light discipline and one which gives full play to their initiative. All who met the Italian " Banda " in the field were impressed by their speed of action, their dash and courage, their outstanding mobility and use of cover.

They have, of course, bad points as well as good ones. R. F. Burton found the Somali a bad traveller on his journey to Harar from Berbera, and most people who have travelled or marched with the Southern Arab find the Somali by comparison a poor marcher. It is not so much distance as pace which defeats them. Used to following their herds through grazing country, the ordinary pace of a march is too much for them. In the coastal lowlands they wilt rapidly, almost comically, and seek water and shade. This lack of endurance is also most marked when they are ill. They are bad patients and give way to illness, putting up a poor fight and dying easily.

Of their physical courage there is no doubt. The Somali gun-bearer is praised in all East Africa. He is faithful, gallant to a fault, and I have heard of not one

instance on the part of a gun-bearer of " nerves," disloyalty or cowardice. His useful qualities lie in the two terms " nomad " and " spearman." All nomads are slow travellers, limited to the pace of their flocks. Most are good horsemen and horse-masters, as is the Somali. All spearmen are amenable to discipline, for the spear is an assault weapon and discipline is required in the assembly for an assault and in its delivery. The Somali is a keen and deadly hunter, and in this finds play for and development of his individuality and initiative.

In the " Horn of Africa " there is material for about four divisions of excellent Somali troops, many of whom have in the past few years seen service in their country and in Abyssinia. The Somali is a highly intelligent man and a quick learner. He is a linguist of repute. In a company of about 110 irregulars over 40 were found who could speak fair French, and among them were men who could make themselves understood in English, Italian and German. All could speak at least a little Arabic. Again, mechanics present no difficulties to them, and there is no doubt that they are intelligent enough to be effective signallers, motor mechanics and artillerymen.

Because of their numbers, qualities and their homogeneity, the Somalis present us with a pool of first-class native man-power, loyal to us and keen to serve. It will be a pity if we do not use them.

Opinion would differ as to whether or not we should follow the Italian example and " stiffen " Somali units with a percentage of Arabs. There seems little reason to do this. The best way to breed distrust in native people is to show it towards them. The only reason for such stiffening is to ensure that among the rank and file there are men who, in moments of dissension in a unit, would be regarded by the Somalis as strangers just as much as their white officers and would rally to these officers in self-defence. This may be an adequate reason for an Italian and might well be so for us also had the Somalis ever given us reason to doubt their loyalty. They have not done so.

To sum up, here are three Gulf of Aden races well worth our study, particularly the last of them. They form a potential source of labour corps, Colonial troops and police—a source which in the present state of the world we would be foolish to neglect.

THE ARMY CADET FORCE

By Captain W. F. L. Newcombe

UP and down the country there are now about one thousand Army Cadet units. These boys, whose uniform is Army battledress with the Cadet Force flash on each arm, are the material for the future intake into the Army, and it is only right that the Army should know something about their constitution, training and objectives.

For a long time now many people have held the view that to give a boy nine years elementary education and then to turn him loose on the world at 14 years of age was bad citizenship and decidedly extravagant. And a certain number have been doing something about it. Voluntary organizations have been working well in this field. The Boy Scouts, drawing recruits mainly from the younger boys, have been in existence for thirty-six years and are international in their scope. Boys' clubs can be found in all the larger towns and cities, with a high aggregate membership, and their appeal has been based on cultural and recreational training. The Churches have done much, too, in the direction of religious discipline, with their various brigades for boys.

No more recent are the origins of the Army cadets, who were starting at the beginning of this century. Run by hard-working enthusiasts, financed by private generosity, cadet units were to be found usually in the poorer quarters of large cities. They drilled, they shot, they went to camp. They boxed and played football and, inevitably, they had a band complete with a big drummer and leopard skin. Long after the Volunteers had become Territorials and even during two wars when the Territorials have become outwardly Regulars, the cadets have retained the true spirit of the old Volunteers.

The Welfare side, too, was strong. Cadet drill halls had their club rooms with often a quarter-size billiards table (though seldom any tips on the cues), a library and canteen. And on the serious side of life there were parsons and laymen who did much good work in a quiet way. An abiding memory is of a saint-like old lady not more than 4 foot 10 inches tall, and over 80 years old at the time. She lived in a couple of rooms in Stepney and twice a week she held a class in the club room of one of the cadet companies there. She would fumble her way up a dark stone staircase into the canteen, and when she came into the room, twenty boys would take off their caps and stand to attention while she read the Lord's Prayer. For forty years the boys came to her rooms, and throughout the first world war she kept in touch with all the boys from that company. And their letters make splendid reading.

Such was the old Cadet Force, independent in spirit and constitution, constantly short of money, ploughing a lonely furrow without publicity, but a cadre on which the present expanded force is being successfully built. In times of national crisis it flourished, in softer days it dwindled.

The picture in 1939 and 1940 was this. About 20,000 boys were in the cadets ranging in age from 12 to 18 years. They were administered by the British National Cadet Association (B.N.C.A.), which was the authority recognized by the Army Council for this purpose. The B.N.C.A. had its county committees which were closely connected to the County Territorial Army Associations. Cadet units received

a small grant for every boy who attended thirty drills in a year, and a loan of equipment for camps. Uniforms they bought themselves, and still the bulk of their income was raised from private sources.

There was, and still is, an important division in the cadets. On the one hand there were school units in those schools which either did not have an O.T.C. or else ran a cadet company for boys who were too young for it and, on the other hand, open units which recruited from boys who had left school and were working.

A crucial moment in the life of the Army cadets was the formation at the beginning of 1941 of the Air Training Corps. This corps was founded with the object of providing potential air crews and ground staff, and offered an opportunity to boys between 16 and 18 years old to get pre-service training and shorten their apprenticeship when they joined the R.A.F. As was to be expected, the new corps met with a keen response from the youth of the country. Flights were formed in places where cadets had never before been seen, officers were commissioned, buildings and schools were lent, committees met, and boys settled down with enthusiasm to drill and P.T., to algebra and Ohm's Law.

It was deliberate policy that the Army cadet expansion did not chase hard on the heels of the A.T.C. There was to be no rivalry and the air crews had to be found. But there are about 300,000 boys in each year age group, and not all of them by any means were in the existing voluntary youth organizations, nor yet in the Sea, Army or Air cadets. The youth of the country wanted to get into uniform, wanted to serve. So the War Office took over the active administration of the Army cadets with the B.N.C.A. behind it for advice.

At the beginning of 1942 the issue of uniforms to Army cadets started, and with the capitation grant increase, expansion began. The policy of decentralizing administration was continued. The county cadet committees were reformed by the Lords Lieutenant, and were based on the old Territorial Army Associations and B.N.C.A. county committees. But in addition to military members, there were co-opted on to each committee members of the Local Education authority and members of Youth organizations. The county committees handle all cadet administration, which includes finance, commissions and quartering. For training, however, cadet units are affiliated to a nearby Home Guard company. This serves a dual purpose. It conserves the supply of training equipment and instructors and also helps to ensure a supply of trained recruits to the Home Guard, which the cadet should join when he is seventeen.

The age question has now become crystallized. At 14 years of age a cadet becomes eligible for a grant, and at 17 he grows out of it. Some units do have junior cadets who are under 14, but these boys are unofficial and unrecognized. Their training is designed to follow scouting rather than military lines.

The boys of over 17 are expected to join the Home Guard, but provision has been made for them to be allowed to form their own sections and platoons and to be available for training the cadets according to their capabilities as leaders. For, basically, it is leaders that the cadets set out to produce. And for this reason the main target of all cadet military training is War Certificate "A." This is taken in two parts, individual and section leading, the first at 15, the second at 16 years old. The subjects in which the cadets have to qualify are fieldcraft, map-reading, rifle, drill and identification. The examination is conducted by a board of Regular or Territorial officers and a unit's value is considerably assessed by the results which it scores.

But if War Certificate " A " tests a unit's efficiency, it is the annual camp which binds the unit. This year the number of cadets who will spend a week in camp will be a record. War conditions do not make large camps a desirable proposition; travelling is difficult, so is feeding, but camping by battalions and companies is going ahead fast. Tentage and accommodation stores are lent by Ordnance; food supply is handled by the R.A.S.C.; transport is generally by train, weather by luck. The keenness of the cadets on their camp is unbounded. In many units they start paying a weekly subscription as early as March, and generally have a credit of twenty-five or thirty shillings—no small sum, in spite of the stories which are put out about high wages in industry.

A possible danger which the simultaneous expansion of youth organizations might produce is that of unrational competition. This has been prevented by planning and arithmetic. The respective ceilings of the three Service cadet forces are fixed and, with the Board of Education watching the interests of the voluntary organizations, a balance struck. In order to correlate their work, an Inter-Services Cadet Committee has been formed and, among other matters, this body watches the conditions of service and training. It is possible for an Army cadet to transfer to the A.T.C. at 16, if he wants to do so, or to have himself earmarked for a naval career.

There is, too, a sound working agreement with the Boy Scouts. No scout is allowed to join the cadets without the consent of his scoutmaster, and where scouts join cadet units they may, if there are enough of them, form their own platoons or sections under their own leaders. The good work which the Scouts have done in the past, and are doing now with their War Service Patrols, is fully recognized. An excellent understanding, too, exists with the Y.M.C.A., the Boys Brigade and the National Association of Boys Clubs.

The Army Cadet Force officers were originally commissioned by the Lord Lieutenant of their County, and they are in future to be given commissions in the Territorial Army Reserve of Officers. They are drawn from various sources. There is the hard core of long service cadet officers who kept the force alive during the lean years; then there are schoolmasters, retired officers, men in reserved occupations and finally youngsters from Junior and Senior Training Corps who are waiting to join the Services. Many of them are also in the Home Guard either as officers or in the ranks, and indeed without the Home Guard assistance the Cadet Force would, inevitably, have been very short of officers. In a number of cases where boys' clubs have formed a cadet unit, the club leaders have taken commissions.

The officers are trained at Home Guard schools, and Commands are organizing courses. Particular emphasis is placed on P.T. and recreational training, and with boy material excellent benefits can be obtained both in physical development and in cultivating the team spirit.

For accommodation cadet units rely on a variety of places. The Education authorities have been very helpful in placing schools and playing fields at cadets' disposal. Territorial Army drill halls and Home Guard headquarters are used. Standing hutted camps are often empty and can be used for training, while the older units have their own drill halls.

That is a brief picture of what the cadet force is like now. It is largely new, very new; possibly two-thirds of the cadets have been in it for less than three months; some have hardly put on their uniforms. But it is essential that the

Army, and the country at large, should understand their cadets and be ready to help them as the cadets can and will help the Army. The plain facts are that one boy in every two in the country is in one of the Service cadet corps and, as long as conscription lasts, one recruit in two, at least, will have some knowledge of the uses and customs of soldiering. He will have learnt to shoot and stalk, to stand at attention, to salute, to sleep hard, to read a map and a whole lot more, at an age when imitation is natural and the muscles are still loose. He will come into the Army with either Certificate " A " or its technical equivalent or else training which has covered the ground.

However, this will not come at once ; for the next two years the standard will be improving. But the people must help. They will see cadets in training in the towns and in camps ; and every encouragement that can be given in the way of obtaining premises, by help in training through demonstrations and suitable lectures, or by money or by letting cadets off for camp, will push the boat along. This is a national movement and it can only succeed if it gets national support.

Finally the welfare-education aspect, which is most important. A war must always create a bias in favour of drilling and wearing uniform—a bias which, in this country at least, is quickly forgotten in peace. The immediate danger being past, interest in purely military training lapses. But whether the war is followed by an armistice or a peace, the problem of the adolescent boy will remain. The Service cadet corps cannot provide a full solution to the problem ; the Churches, the Board of Education, parents and guardians must and will have their say. But the Service cadets will go on. They provide discipline, they train for leadership and they can give to the youth of the country an *esprit-de-corps* which they have long looked for and too seldom been given.

CORRESPONDENCE

(Correspondence is invited on subjects which have been dealt with in the Journal, or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the Journal.—EDITOR.)

SINKING OF THE "BISMARCK"

To the Editor of the R.U.S.I. Journal.

SIR,—On page 115 of the May issue of the R.U.S.I. JOURNAL there is an error which I should like to correct in the interests of historical accuracy. The statement is made "on the evening of that day a British cruiser—H.M.S. 'Norfolk'—reported the enemy ships in the Denmark Strait, West of Cape Horn." By inference this was the first sighting by British surface forces. That was not so. At 7.22 p.m. on that evening, one hour and ten minutes before H.M.S. "Norfolk" made contact as the result of H.M.S. "Suffolk's" report, the latter sighted the enemy's ships at 12,000 yards skirting the ice at 20 knots. The look-out whose vigilance enabled H.M.S. "Suffolk" to turn into the mist to take up her shadowing position before the Germans could open fire at such close range was subsequently decorated by His Majesty with the D.S.M.

Incidentally, a few lines below on the same page, H.M.S. "King George V" should read H.M.S. "Prince of Wales."

L. E. PORTER,
Commander R.N.

GENERAL SERVICE NOTES

EMPIRE SERVICE CASUALTIES.—It was officially announced on 11th June that the casualties in the armed forces of the British Empire from 3rd September, 1939, to 2nd September, 1941 (excluding deaths from natural causes), were :—

All ranks.	*U.K.*	*Dominions.*	*India and Burma.*	*Colonies.*
Killed	42,267	4,636	1,439	611
Wounded	32,903	7,279	5,374	807
Prisoners of war ...	53,634	3,104	1,714	6
Missing	16,208	8,785	64	4,699
Total	145,012	23,804	8,591	6,123

SUPPLIES TO RUSSIA.—Speaking on 18th July, the Minister of Production (Mr. Lyttelton) stated that we had sent to Russia all the tanks and aircraft we had promised. We had been shipping tanks to Russia at the rate of 50 a week. By the end of May we had actually shipped 11 per cent. more aircraft than we had promised up to the end of June. For every 100 aircraft we promised, we had shipped 111. These supplies had been sent in spite of the urgent demands of our own Forces.

NAVY NOTES

GREAT BRITAIN

His Majesty The King

On 16th April the King visited Chatham Dockyard, the Royal Naval Barracks, the Royal Marine Barracks and an Army Barracks.

In May the King and Queen made a three-day tour of the West Country, and at one port heard first-hand reports of the raid on St. Nazaire from officers and men who took part in it.

On 11th June it was announced that the King had made a three-day visit to the Home Fleet. He stayed in the Fleet flagship—H.M.S. " Duke of York "—and visited a number of cruisers, destroyers, depot-ships and other vessels of the British squadrons. At the same time it was made known that U.S. warships—known as the Task Force—are serving with the Fleet. The King included in his tour a visit to a modern U.S. cruiser, where he was received by Rear-Admiral Giffen, U.S.N. He afterwards went on board an American battleship, where Admiral Stark—Commander-in-Chief, U.S. Naval Forces in European waters—received him.

For their visit to Northern Ireland, on which they arrived at Belfast on 24th June, the King and Queen travelled in H.M.S. " Phoebe." Shipyards were included in their tour. Their Majesties returned in the destroyer " Bicester."

Appointments

It was announced on 19th May that the King had approved the following appointments :—

Mediterranean.—Rear-Admiral Sir Henry H. Harwood, K.C.B., O.B.E., to be Commander-in-Chief, Mediterranean, with the acting rank of Admiral, in succession to Admiral Air Andrew B. Cunningham, G.C.B., D.S.O. Acting Admiral Sir Henry Harwood had then arrived at Alexandria.

Portsmouth.—Admiral Sir Charles J. C. Little, K.C.B., to be Commander-in-Chief, Portsmouth, in succession to Admiral Sir William M. James, K.C.B. This appointment will be assumed at a later date.

B.A.D., Washington.—Admiral Sir Andrew B. Cunningham, G.C.B., D.S.O., to succeed Admiral Sir Charles Little as Head of the British Admiralty Delegation in Washington. Admiral Cunningham arrived in America towards the end of June.

Naval Staff.—Rear-Admiral Henry B. Rawlings, C.B., O.B.E., has relieved Rear-Admiral Sir Henry Harwood as an Assistant Chief of the Naval Staff. Rear-Admiral Eric J. P. Brind, C.B.E., will shortly relieve Rear-Admiral Arthur J. Power, C.B., C.V.O., as an Assistant Chief of Naval Staff. Rear-Admiral Power has been selected for a seagoing appointment.

Shore Appointments.—On 14th April it was announced that the following Flag Officers had been given shore appointments abroad : Rear-Admiral Frank H. Pegram, D.S.O., Rear-Admiral Arthur D. Read.

Madagascar.—In the House of Commons on 3rd June, Mr. Attlee, in reply to a question, stated that the local command of all naval, military and air forces in the Diego Suarez area was vested in the Fortress Commander, Major-General Sturges, of the Royal Marines.

Combined Operations.—On 13th April Mr. Churchill announced in the House of Commons that on 19th October, 1941, Admiral of the Fleet Sir Roger Keyes was succeeded in charge of combined operations by Captain Lord Louis Mountbatten, G.C.V.O., D.S.O., R.N., with the title of Adviser on Combined Operations (A.C.O.), and the rank of Commodore, First Class. On 18th March, 1942, Captain Lord Louis Mountbatten was appointed Chief of Combined Operations (C.C.O.), which office carries with it the acting rank of Vice-Admiral and the honorary ranks of Lieutenant-General and Air Marshal.

EAST INDIES COMMAND ABOLISHED.—On 23rd June *The Times* correspondent at Colombo reported that the post of Commander-in-Chief, East Indies Squadron, had been abolished, and that Vice-Admiral Arbuthnot had hauled down his flag and left with Lady Arbuthnot for England. Rear-Admiral A. D. Read has been appointed Flag Officer in Ceylon, in charge of naval establishments, under the general directions of Vice-Admiral Sir Geoffrey Layton, Commander-in-Chief, Ceylon.

PAYMASTER DIRECTOR-GENERAL.—On 12th May it was announced that Paymaster Captain William E. H. Jolly, R.N., had been appointed Paymaster Director-General, with the rank of Paymaster Rear-Admiral, to date 10th July, 1942, in succession to Paymaster Rear-Admira' Sir David S. Lambert, K.C.B., O.B.E.

RETIREMENT AND PROMOTION

On 17th June it was announced that Admiral Sir Ragnar M. Colvin had retired at his own request, in order to facilitate the promotion of younger officers.

The following promotions, to date 15th June, were announced on the same date :—

Vice-Admiral Sir George H. D'Oyly Lyon, K.C.B., to Admiral.

Rear-Admiral Stuart S. Bonham-Carter, C.B., C.V.O., D.S.O., to Vice-Admiral.

HONOURS AND AWARDS

VICTORIA CROSS

On 22nd May it was announced that three Victoria Crosses and a number of other awards had been approved by the King for daring and valour in the attack on the German naval base at St. Nazaire on the night of 27th March.

Commander Robert Edward Dudley Ryder, R.N., commanded a force of small unprotected ships in an attack on a heavily defended port, and led H.M.S. " Campbeltown " in under intense fire from short-range weapons at point-blank range. Though the main object of the expedition had been accomplished in the beaching of the " Campbeltown," he remained on the spot conducting operations, evacuating men from the " Campbeltown," and dealing with strong points and close-range weapons while exposed to heavy fire for over an hour, and did not withdraw till it was certain that his ship could be of no use in rescuing any of the Commando troops who were still ashore. That his motor gunboat, now full of dead and wounded, should have survived and should have been able to withdraw through an intense barrage of close-range fire was almost a miracle.

Lieutenant-Commander Stephen Halden Beattie, R.N., showed great gallantry and determination in command of H.M.S. " Campbeltown." Under intense fire directed at the bridge from point-blank range of about 100 yards, and in the face of the blinding glare of many searchlights, he steamed her into the lock-gates and beached and scuttled her in the correct position. The official citation added : " This Victoria Cross is awarded to Lieutenant-Commander Beattie in recognition not only of his own valour, but also of that of the unnamed officers and men of a very gallant ship's company, many of whom have not returned." It was made known earlier in May that Lieutenant-Commander Beattie was a prisoner of war.

Able Seaman William Alfred Savage, who was awarded the V.C. posthumously, showed great gallantry, skill and devotion to duty as gunlayer of the pom-pom in a motor gunboat. Completely exposed, and under heavy fire, he engaged positions ashore with cool and steady accuracy. On the way out of the harbour he kept up the same vigorous and accurate fire against the attacking ships until he was killed at his gun. The official citation added : " This Victoria Cross is awarded in recognition not only of the gallantry and devotion to duty of Able Seaman Savage, but also of the valour shown by many others, unnamed, in motor launches, motor gunboats, and motor torpedo-boats, who gallantly carried out their duty in entirely exposed positions against enemy fire at very close range."

On 10th June it was announced that the King had approved the award of the Victoria Cross for great valour while serving in H.M.S. " Thrasher " to *Lieutenant Peter Scawen Watkinson Roberts, R.N.*, and *Petty Officer Thomas William Gould.* On 16th February, in daylight, H.M. Submarine " Thrasher " attacked and sank a heavily escorted supply ship. She was at once attacked by depth charges and was bombed by aircraft. The presence of two unexploded bombs in the gun-casing was discovered when, after dark, the submarine surfaced and began to roll. Lieutenant Roberts and Petty Officer Gould volunteered to remove the bombs, which were of a type unknown to them. The danger in dealing with the second bomb was very great. To reach it they had to go through the casing, which was so low that they had to lie at full length to move in it. Through this narrow space, in complete darkness, they pushed and dragged the bomb for a distance of some 20 feet until it could be lowered over the side. Every time the bomb was moved there was a loud twanging noise as of a broken spring, which added nothing to their peace of mind. This deed was the more gallant as H.M.S. " Thrasher's " presence was known to the enemy; she was close to the enemy coast, and in waters where his patrols were known to be active day and night. There was a very great chance, and they knew it, that the submarine might have to crash-dive while they were in the casing. Had this happened they must have been drowned.

C.B.—On 27th May, Commander G. H. Stokes, D.S.C., R.N., was awarded the C.B. " for great skill and enterprise in command of H.M.S. ' Sikh ' in a brilliant night action in the Central Mediterranean, in which, without hurt or loss, two Italian cruisers and an E-boat were destroyed and a torpedo boat badly damaged."

C.B.E.—On 20th May, Captain G. W. G. Simpson, R.N., was awarded the C.B.E. " for leadership and resolute example in command of a submarine flotilla."

On 10th June, Captain A. D. Nicholl, D.S.O., R.N., was awarded the C.B.E. " for gallantry, fortitude and resolution in bringing his ship, H.M.S. ' Penelope ' to port in the face of relentless and determined enemy air attack at Malta and on passage."

On 17th June, the C.B.E. was awarded to Acting Engineer Captain H. E. Lewis, R.N., Director of Transport.

Birthday Honours

The following were included in the Birthday Honours conferred by the King on 11th June :—

Baronet.—Admiral Sir Andrew Cunningham, lately Commander-in-Chief, Mediterranean.

G.B.E.—Admiral Sir Charles J. C. Little.

K.C.B.—Vice-Admiral Geoffrey S. Arbuthnot, Vice-Admiral Henry R. Moore, Vice-Admiral Alban T. B. Curteis, Surgeon Vice-Admiral Sheldon F. Dudley.

K.B.E.—Vice-Admiral Francis M. Austin (Retired), Vice-Admiral John A. Edgell (Retired), Vice-Admiral Francis T. B. Tower (Retired).

C.B.—Rear-Admiral M. L. Clarke, Rear-Admiral G. J. A. Miles, Rear-Admiral (serving as Commodore, Second Class) C. V. Robinson (Retired), Rear-Admiral R. H. L. Bevan (Retired), Rear-Admiral A. H. Taylor (Retired), Engineer Rear-Admiral H. W. Wildish.

Personnel

Officers' Widows' Pensions.—On 13th April, the First Lord of the Admiralty, in answer to a question in Parliament said " . . . the regulations will be amended so as to provide that, as an alternative, if more favourable to the pension rate already allowed, the widow of a retired officer who loses his life as a result of further service during the War shall be eligible for pension at a rate equal to the total of the awards for which she would have qualified if her husband had lost his life as a Civil Defence Volunteer, provided that it does not exceed the attributable pension for the officer's retired rank. This will ensure that every such widow will receive a total pension

substantially greater than the ordinary pension which she would have received had her husband died a natural death."

CONVOY COMMODORES.—On 13th May, it was stated in Parliament that thirteen Commodores of Convoys had lost their lives at sea, including nine Flag Officers recalled from the Retired List and serving in that rank.

(*Note*.—The above two paragraphs should be read in conjunction with each other.—EDITOR.)

SEA CADET CORPS

STRENGTH.—Plans for the expansion of the Sea Cadet Corps to 50,000, in about 400 units (as compared with about 120 at the end of 1941) were announced in a leaflet issued by the Board of Education in June to local education authorities.

The Corps will be organized in six areas, each under an area officer holding the rank of Lieutenant-Commander. Training includes elementary naval instruction, including squad drill, seamanship, signals, boat-work wherever water is available, and physical exercises. The Board of Education asks local education authorities to co-operate with local units in encouraging the cadets to continue their general education and in providing social and recreational facilities. Boys are accepted into the Corps from the age of 14 to 17. At 17, they may join the Admiralty " Y " scheme, which provides for entry into the Royal Navy when they reach the age for compulsory service.

WOMEN'S ROYAL NAVAL SERVICE

On 11th May, the Queen visited H.M.S. " President III " and saw the work of officers and ratings of the W.R.N.S., of which Her Majesty is Commandant-in-Chief.

At a meeting in London in April, a Benevolent Trust for members of the W.R.N.S. was formed. The Queen has consented to become Patron of the Trust, and the Duchess of Kent was elected President.

MISCELLANEOUS

APPROPRIATION ACCOUNT.—The Navy Appropriation Account for 1940, the first presented by the Admiralty covering a full year of war activities, was published in April by the Stationery Office (price 4d.). It showed a net expenditure of £384,162,378, of which the amount for shipbuilding, repairs, maintenance, naval armaments, works, buildings and repairs at home and abroad, and merchant shipbuilding was £285,619,043. Wages amounted to £45,250,016, and victualling and clothing to £24,815,668.

DOMINIONS AND COLONIES

AUSTRALIA

APPOINTMENTS.—On 25th June it was announced that Rear-Admiral V. A. C. Crutchley, V.C., D.S.O., had been appointed to command the Australian Squadron in succession to Rear-Admiral J. G. Crace, whose three years term had expired. Commodore G. D. Moore has succeeded Commodore J. W. Durnford as Second Naval Member of the Australian Naval Board.

ALLIED HEADQUARTERS.—On 23rd April, it was announced at Melbourne that Captain F. E. Getting, R.A.N., Deputy Chief of Staff, had been appointed to the staff of Vice-Admiral H. F. Leary, U.S.N., Commanding the Naval Forces of the United Nations in the South-West Pacific Area, which includes Australia.

LOSS OF H.M.A.S. " VAMPIRE."—On 22nd April, Mr. Curtin, Prime Minister, announced that the destroyer " Vampire " had been lost by enemy action during recent operations in the Bay of Bengal. Most of the crew were saved, but the commanding officer, Commander W. T. A. Moran, R.A.N., was missing.

H.M.A.S. " NESTOR " SUNK.—At the end of June, Mr. Makin, Commonwealth Minister of the Navy, announced that, while escorting a Mediterranean convoy in the

naval and air action of 15th June, the Australian destroyer "Nestor," of the new "Javelin" class, was sunk. Of her complement of more than 200, only three were killed and one was seriously injured. The "Nestor," which was transferred to the Commonwealth for manning and inclusion in the Royal Australian Navy, was commissioned last February under Commander A. S. Rosenthal, D.S.O., R.A.N., and had taken part in operations in various naval theatres.

CANADA

NAVAL STRENGTH.—On 7th May, Mr. MacDonald, Minister for Naval Affairs, stated in the House of Commons at Ottawa that the strength of the Canadian Navy was about 400 units, including over 12 destroyers, 75 corvettes and 45 minesweepers. By March, 1943, the Navy would be expanded to 500 units with a personnel of 44,000 officers and men. Keels for new Canadian destroyers would be laid at an early date, but the construction of no larger craft was contemplated. Officers of the British W.R.N.S. would soon arrive in Canada to help to organize a woman's branch for the Canadian Navy, several thousand strong. Mr. MacDonald claimed that the Canadian Navy was now doing almost one-third of the convoy work in the North Atlantic, and paid a high tribute to its work, and to that of the Royal Navy, with whom there was happy co-operation.

NEW ZEALAND

CHIEF OF STAFF.—Commodore Sir Atwell Lake has been appointed to succeed Commodore W. E. Parry, whose period of loan to New Zealand had expired, as Chief of the Naval Staff and First Member of the Naval Board.

SOUTH PACIFIC AREA.—On 23rd April, Mr. Fraser, the Prime Minister, announced that New Zealand, Fiji, and the other islands for the defence of which New Zealand is responsible, had been allotted to a "South Pacific Area," which would be placed under American naval command. Mr. Fraser said it had been their desire that Australia and New Zealand should remain closely linked in one area under General MacArthur, but strategical considerations as determined in Washington must prevail, and New Zealand had accordingly concurred. The closest co-operation, however, between the Australian and New Zealand Governments would continue, and between General MacArthur and the commanders in New Zealand and the South Pacific area. The whole Pacific area would be co-ordinated by the Combined Chiefs of Staff and the Pacific War Council in Washington.

INDIA

H.M.I.S. "INDUS" SUNK.—The "Indus" was sunk in a bombing attack on 6th April. No lives were lost, and the total casualties were ten wounded.

INDIAN SEAMEN.—Opening the first club for Indian seamen in Liverpool on 10th April, the Duke of Devonshire, Under-Secretary for India, said that a quarter of the whole British Mercantile Marine was Indian. Almost the first casualties of the War were Indian seamen, who went on facing every peril in order that our commerce might continue. Their contribution at sea had been absolutely vital.

BURMA EVACUATION.—Some 40,000 Indians were evacuated from Burma ports under the scheme organized by the Royal Indian Navy under the Commodore, Burma Coast. Indian ships which were off the Coast when the evacuation began helped in the work under constant threat from enemy air attack.

NEW NAVAL SCHOOLS.—The rapid expansion of the Royal Indian Navy has necessitated the building of a new torpedo school and a new anti-submarine school, and the enlargement of the gunnery school. The new anti-submarine school will be the largest in the British Commonwealth outside the United Kingdom.

FOREIGN NAVIES

An article on the principal developments of Foreign Navies will be found at the beginning of this JOURNAL.

ARMY NOTES

His Majesty the King

On 24th April, the King, accompanied by the Queen, visited a Canadian armoured division in the South-East Area. The King visited a British armoured division in the Southern Area on 1st May, an infantry division in the Home Counties on 14th May, the Guards Armoured Division and air-borne troops in the Southern Command towards the end of May, troops in the South-Eastern Command on 27th May and 1st June, troops in Northern Ireland at the end of June, and an Army ordnance depot in the North-West on 16th July.

The King inspected Home Guard units at training in the South-Eastern Command on 12th July.

The King, accompanied by the Queen, inspected the In-Pensioners on parade at the Royal Hospital, Chelsea, on 29th May, and visited the Royal Military College, Sandhurst, on 19th July.

In the course of their visit to Northern Ireland at the end of June, the King and Queen spent a day among American troops.

The Queen (Commandant-in-Chief), accompanied by the Princess Royal (Controller Commandant), visited units of the Auxiliary Territorial Service in the South-Eastern Command on 14th July.

The King has been pleased to assume the Honorary Colonelcy of the Newfoundland Field Regiment, Royal Artillery; the Colonelcy-in-Chief of the Home Guard on 13th May, 1942 (the second anniversary of the birth of the force); and the Colonelcy-in-Chief of the Army Cadet Force, 11th June, 1942.

His Majesty Haakon VII, King of Norway, K.G., G.C.B., G.C.V.O., was appointed Colonel-in-Chief, The Green Howards; 12th May, 1942.

The King has been pleased to approve the following appointments:—

To be Aide-de-Camp to the King.—Colonel (acting Major-General) W. G Michelmore, D.S.O., M.C., T.D., D.L.; 31st January, 1942.

To be Hon. Physician to the King.—Colonel H. E. Shortt, C.I.E., M.D., Ch.B., D.T.M. & H., D.S.C., V.H.S., I.M.S.; 23rd August, 1941.

To be Hon. Surgeons to the King:—

Colonel J. S. S. Martin, M.B., Ch.B., M.R.C.P., V.H.S., I.M.S.; 13th October 1941.

Major-General G. A. Blake, M.B., late R.A.M.C.; 27th May, 1942.

Colonels Commandant.—General Sir Clement Armitage, K.C.B., C.M.G., D.S.O., to be Colonel Commandant of the Indian Army Ordnance Corps.

Lieut.-General T. J. Hutton, C.B., M.C., to be Colonel Commandant, Royal Artillery; 11th March, 1942.

Regimental Colonels.—Colonel J. N. Lumley, C.B.E., M.C., to be Colonel of the 13th/18th Hussars (Queen Mary's Own); 15th April, 1942.

Lieut.-General Sir William Platt, K.C.B., D.S.O., to be Colonel of the Wiltshire Regiment; 28th June, 1942.

Army Council

The King was pleased by Letters Patent under the Great Seal bearing date 16th June, 1942, to appoint the undermentioned to be His Majesty's Army Council:—

The Rt. Hon. Sir P. James Grigg, K.C.B., K.C.S.I., President.

Brigadier-General H. P., Baron Croft, C.M.G., T.D., Vice-President.

General Sir Alan F. Brooke, K.C.B., D.S.O.

Lieut.-General Sir Ronald F. Adam, Bt., K.C.B., D.S.O., O.B.E.

General Sir Walter K. Venning, G.C.B., C.M.G., C.B.E., M.C., A.D.C.Gen.

Major-General (acting Lieut.-General) A. E. Nye, C.B., M.C.

Colonel (acting Lieut.-General) R. M. Weeks, C.B.E.

Captain A. Henderson, K.C.

Captain E. D. Sandys.

Sir Robert J. Sinclair, K.B.E.

Sir Frederick C. Bovenschen, K.B.E., C.B.

E. B. B. Speed, Esq., M.C.

Honours and Awards

Victoria Cross.—The King has been pleased to approve the award of the Victoria Cross to—

(*a*) Second Lieutenant G. W. Gunn, M.C., Royal Horse Artillery (posthumous), in recognition of most conspicuous courage and devotion at Sidi Rezegh, in Libya, on 21st November, 1941.

(*b*) Rifleman J. Beeley, The King's Royal Rifle Corps (posthumous)—in recognition of outstanding courage and self-sacrifice at Sidi Rezegh on 21st November, 1941.

(*c*) Major (temporary Lieut.-Colonel) G. C. T. Keyes, M.C., the Royal Scots Greys, R.A.C. (posthumous)—in recognition of magnificent leadership, outstanding gallantry, supreme self-sacrifice and devotion to duty in Libya on the night of 17th November, 1941.

G.C.M.G.—On 11th May, the King invested Major-General (temporary Lieut.-General) Sir William G. S. Dobbie, K.C.B., C.M.G., D.S.O., with the insignia of a Knight Grand Cross of the Order of St. Michael and St. George.

The King's Birthday Honours List of 11th June, 1942, included the following awards :—

G.C.B.—General Sir Walter K. Venning, K.C.B., C.M.G., C.B.E., M.C.

K.C.B.—Lieut.-General A. F. A. N. Thorne, C.B., C.M.G., D.S.O.

Major-General Sir B. N. Sergison-Brooke, K.C.V.O., C.B., C.M.G., D.S.O.

General A. B. Haig, C.B., M.C., Indian Army.

K.C.I.E.—Lieut.-General E. P. Quinan, C.B., D.S.O., O.B.E., Indian Army.

K.B.E.—Major-General G. B. O. Taylor, C.B., C.B.E.

Knight Bachelor.—Major-General J. Taylor, I.M.S.

C.B.—Lieut.-General E. Puttick, D.S.O., New Zealand Military Forces.

Major-General (acting Lieut.-General) A. E. Nye, M.C.

Major-General (acting Lieut.-General) J. G. des R. Swayne, C.B.E.

Major-General A. T. Miller, M.C.

Major-General F. G. Hyland, M.C.

Major-General D. Clewer.

Major-General A. V. T. Wakeley, D.S.O., M.C.

Major-General O. M. Lund, D.S.O.

Major-General D. G. Watson, C.B.E., M.C.

Major-General R. F. B. Naylor, C.B.E., D.S.O., M.C.

Major-General R. B. Pargiter.

Major-General H. M. Gale, C.B.E., M.C.

Major-General C. G. Woolner, M.C.

Major-General F. H. N. Davidson, D.S.O., M.C.

Major-General G. C. Kemp, M.C.

Colonel (temporary Major-General) H. P. M. Berney-Ficklin, M.C.

Major-General (acting Lieut.-General) W. G. H. Vickers, O.B.E., Indian Army.

Major-General A. C. Munro, M.D., K.H.P., Indian Medical Service.

Major-General R. B. Deedes, O.B.E., M.C., Indian Army.

Lieut.-Colonel (temporary Brigadier) F. R. North, M.C., E.D., Australian Military Forces.

Appointments and Promotions

The following appointments have been announced :—

To be Governor and Commander-in-Chief, Malta.—General the Right Hon. Viscount Gort, V.C., G.C.B., C.B.E., D.S.O., M.V.O., M.C. ; 9th May, 1942.

To be Lieutenant of His Majesty's Tower of London.—Major-General Sir Sanford J. P. Scobell, K.B.E., C.B., C.M.G., D.S.O. ; 16th May, 1942.

To be Governor and Commander-in-Chief, Gibraltar.—Lieut.-General F. N. Mason-MacFarlane, C.B., D.S.O., M.C.

To be Deputy-Chief of the Imperial General Staff, with acting rank of Lieut.-General. —Major-General R. M. Weeks, C.B.E., D.S.O., M.C. ; 15th June, 1942.

To be Military Secretary to the Secretary of State for War.—Lieut.-General Sir H. Colville Wemyss, K.B.E., C.B., D.S.O., M.C.

To be Chief of the British Army Staff at Washington.—Lieut.-General G. N. Macready, C.B., C.M.G., D.S.O., O.B.E., M.C.

The following promotions have been announced :—

Generals—

The undermentioned Lieut.-General to be General :—

Sir Ronald F. Adam, Bt., K.C.B., D.S.O., O.B.E. ; 12th April, 1942.

Lieut.-Generals—

The undermentioned Major-General (temporary Lieut.-General) to be Lieut.-General :—

G. le Q. Martel, C.B., D.S.O., M.C., M.I.Mech.E. ; 12th April, 1942.

The undermentioned Major-Generals (acting Lieut.-Generals) to be temporary Lieut.-General :—

E. C. A. Schreiber, C.B., D.S.O. ; 8th May, 1942.

H. B. D. Willcox, C.B., D.S.O., M.C. ; 12th May, 1942.

K. A. N. Anderson, C.B., M.C. ; 19th May, 1942.

Sir Noel M. de la P. Beresford-Peirse, K.B.E., D.S.O. ; 19th April, 1942.

F. N. Mason-Macfarlane, C.B., D.S.O., M.C. ; 15th July, 1942.

The undermentioned Major-Generals to be acting Lieut.-General :—

A. G. O. M. Mayne, C.B.E., D.S.O., Indian Army ; 12th May, 1942.

W. H. C. Ramsden, C.B.E., D.S.O., M.C. ; 8th July, 1942.

The undermentioned Colonels (temporary Major-Generals) to be acting Lieut.-General :—

J. S. Steele, D.S.O., M.C. ; 8th April, 1942.

F. E. Morgan ; 14th May, 1942.

R. M. Weeks, C.B., D.S.O., M.C. ; 15th June, 1942.

The undermentioned Major-Generals to be local Lieut.-General :—

Sir Frederick Gwatkin, K.C.B., D.S.O., M.C., Indian Army ; 27th February, 1942.

Sir Arthur F. Smith, K.B.E., C.B., D.S.O., M.C. ; 16th June, 1942.

Major-Generals :—

The undermentioned Colonels (temporary Major-Generals) to be Major-General :—

G. C. Kemp, M.C. ; 12th April, 1942.

J. E. Utterson-Kelso, D.S.O., O.B.E., M.C. ; 1st May, 1942.

The undermentioned Colonels (acting Major-Generals) to be Major-General :—

G. O. de R. Channer, C.B.E.; M.C., A.D.C., Indian Army ; 16th March, 1942, with seniority from 22nd April, 1940.

G. L S. Hawkins, M.C., Indian Army ; 12th April, 1942.

G. A. Blake, M.B. (late R.A.M.C.) ; 27th May, 1942.

A. F. P. Christison, M.C. ; 5th July, 1942.

The undermentioned Colonels (acting Major-Generals) to be temporary Major-General :—

F. W. Messervy, Indian Army ; 14th April, 1942.

J. E. Utterson-Kelso, D.S.O., O.B.E., M.C. ; 18th April, 1942.

J. N. Thomson, D.S.O., M.C., A.D.C. ; 22nd April, 1942.

H. de R. Morgan, D.S.O. ; 8th May, 1942.

D. R. D. Fisher, C.B.E., D.S.O. ; 10th May, 1942.

D. J. McMullen, C.B.E., D.S.O. ; 13th May, 1942.

D. N. Wimberley, M.C. ; 21st May, 1942.

L. A. Hawes, C.B.E., D.S.O., M.C. ; 8th May, 1942.

M. C. Dempsey, D.S.O., M.C. ; 15th June, 1942.

St. J. D. Arcedeckne-Butler ; 16th June, 1942.

B. G. Horrocks, M.C. ; 27th June, 1942.

War Substantive Lieut.-Colonel (acting Major-General) The Viscount Bridgeman, D.S.O., M.C., retired pay, to be temporary Major-General and War Substantive Colonel ; 3rd June, 1942.

The undermentioned Colonels (temporary Brigadiers) to be acting Major-General :—

P. G. S. Gregson-Ellis, O.B.E. ; 17th March, 1942.

P. H. Mitchiner, C.B.E., T.D., M.D., M.S., F.R.C.S., K.H.S., T.A. ; 15th April, 1942.

R. E. Vyvyan, M.B.E., M.C. ; 15th January, 1942.

W. P. A. Bradshaw, D.S.O. ; 8th April, 1942.

G. W. R. Templer, D.S.O., O.B.E. ; 10th April, 1942.

H. R. Kerr, O.B.E., M.C. ; 13th April, 1942.

E. D. Fanshawe, C.B.E. ; 1st May, 1942

A. H. Gatehouse, D.S.O., M.C. ; 9th April, 1942.

E. B. Rowcroft, C.B.E. ; 10th May, 1942.

J. D. Inglis, O.B.E., M.C. ; 13th April, 1942.

E. H. Costin, D.S.O. ; 12th May, 1942.

V. Evelegh, O.B.E. ; 13th June, 1942.

B. Cuff, C.B.E. ; 1st July, 1942.

The undermentioned Lieut.-Colonels (temporary Brigadiers) to be acting Major-General :—

T. W. Rees, C.I.E., D.S.O., M.C., Indian Army ; 30th March, 1942.

H. R. Briggs, D.S.O., Indian Army ; 12th May, 1942.

H. B. Hibbert, D.S.O., K.O.Y.L.I. ; 30th May, 1942.

G. H. Geake, R.A.O.C. ; 31st May, 1942.

The undermentioned to be acting Major-General :—

War Substantive Lieut.-Colonel (temporary Brigadier) D. C. Butterworth, D.S.O., North Staffordshire Regiment ; 23rd April, 1942.

Lieut.-Colonel (temporary Colonel) J. F. Harter, D.S.O., M.C., Suffolk Regiment (T.A.) (Major, retired pay) ; 7th May, 1942.

War Substantive Lieut.-Colonel (temporary Brigadier) D. C. Bullen-Smith, M.C., King's Own Scottish Borderers ; 31st May, 1942.

War Substantive Lieut.-Colonel (local Major-General) T. J. W. Winterton, O.B.E., Oxfordshire and Buckinghamshire Light Infantry ; 1st April, 1942.

Major (acting Brigadier) J. M. L. Renton, D.S.O., O.B.E., Rifle Brigade ; 19th June, 1942.

Colonel J. N. Slater, C.B.E., M.C. ; 19th June, 1942.

War Substantive Lieut.-Colonel (acting Brigadier) The Lord Rennell of Rodd, Royal Artillery, to be local Major-General ; 23rd June, 1942.

Lieut.-Colonel (temporary Brigadier) Sir Percy R. Laurie, K.C.V.O., C.B.E., D.S.O., retired pay, to be local Major-General ; 11th July, 1942.

THE ARMY IN INDIA.—The following appointments and promotions have been announced :—

To be Deputy Commander-in-Chief in India.—General Sir Alan F. Hartley, K.C.S.I., C.B., D.S.O., A.D.C. General, Indian Army ; 7th March, 1942.

To be Master General of Ordnance, India.—Acting Lieut.-General C. A. Bird, C.B., D.S.O. ; 1st April, 1942.

To be Engineer-in-Chief, India.—Major-General R. L. Bond, C.B.E., D.S.O., M.C. ; 16th March, 1942.

To be Commanders, with acting rank of Lieut.-General :—

Major-General Sir Noel M. de la P. Beresford-Peirse, K.B.E., D.S.O. ; 9th April, 1942.

Colonel (acting Lieut.-General) W. J. Slim, M.C., Indian Army ; 14th March, 1942.

Acting Lieut.-General H. B. D. Willcox, D.S.O., M.C. ; 26th May, 1942.

To be Additional Deputy Adjutant-General, G.H.Q., India, with acting rank of Major-General.—Colonel (temporary Brigadier) G. O. de R. Channer, C.B.E., M.C., Indian Army ; 22nd February, 1942.

To be Director of Military Training, G.H.Q., India, with acting rank of Major General.—Bt. Lieut.-Colonel (acting Brigadier) J. G. Elliott ; 8th March, 1942.

To be D.A. and Q.M.G., with acting rank of Major-General.—Lieut.-Colonel (temporary Colonel) F. R. R. Butcher, M.C., Indian Army ; 21st March, 1942.

To be Dy. Quartermaster-General in India, with acting rank of Major-General.—Colonel (acting Major-General) C. M. P. Durnford, C.I.E., Indian Army; 16th March, 1942.

To be Director of Military Operations, with acting rank of Major-General.—Colonel (temporary Brigadier) C. A. Osborne, Indian Army; 9th April, 1942.

To be Major-General i/c Administration of a Command, with acting rank of Major-General.—Colonel (acting Brigadier) F. J. Alfieri; 29th April, 1942.

To be a District Commander.—Major-General R. C. Money, M.C.; 11th May, 1942.

To be District Commanders, with acting rank of Major-General :—

Colonel (temporary Brigadier) N. G. Hind, M.C., Indian Army; 16th March, 1942.

Colonel (acting Major-General) A. F. P. Christison, M.C.; 14th June, 1942.

To be Divisional Commanders, with acting rank of Major-General :—

Colonel (acting Major-General) W. L. Lloyd, C.B.E., D.S.O., M.C., Indian Army; 8th March, 1942.

Colonel (temporary Brigadier) R. Richardson, M.C.; 2nd March, 1942.

Temp. Lieut.-Colonel (acting Brigadier) D. T. Cowan, M.C.; 2nd March, 1942.

Colonel (acting Major-General) G. A. P. Scoones, D.S.O., O.B.E., M.C., Indian Army; 9th April, 1942.

Lieut.-Colonel (temporary Brigadier) R. H. Wordsworth, Indian Army; 28th March, 1942.

Lieut.-Colonel (temporary Brigadier) D. D. Gracey, M.C., Indian Army; 1st April, 1942.

Lieut.-Generals—

The undermentioned Major-Generals to be acting Lieut.-General :—

T. W. Corbett, C.B., M.C., Indian Army; 12th January, 1942.

W. G. H. Vickers, O.B.E., Indian Army; 2nd March, 1942.

Major-Generals—

The undermentioned Colonels to be temporary Major-General :—

Acting Lieut.-General W. J. Slim, M.C., Indian Army; 1st June, 1942.

Acting Major-General J. B. Scott, M.C., Indian Army; 1st July, 1942.

General

War Office.—A reorganization of the General Staff Department of the War Office was announced on 10th June. The General Staff will be divided into two main parts, both under the supreme general control of the Chief of the Imperial General Staff. One part will deal with planning, operations and training and will be the immediate charge of the Vice-Chief of the Imperial General Staff. The other part will be the charge of a new member of the Army Council, the Deputy Chief of the Imperial General Staff, who will have directly under him directorates concerned with Army organization, the assignment of finished munitions, and the policy and development of the main classes of military equipment.

To the D.I.C.G.S. will be attached the recently appointed Scientific Adviser, who will be responsible that Army requirements and the means of fulfilling them are projected against a background of modern science and research. The D.C.I.G.S. will be a member of the Supply Council, as well as of the Army Council, and there will be a close liaison at all levels between his officers and those of the Ministry of Supply.

Maritime Regiments.—It was made known at the end of last April that there were then in existence four Maritime Regiments of the Royal Artillery, numbering in all over 10,000 men.

These regiments had their origin in 1940, after Dunkirk, when the Army had large numbers of men in service for whom there were no weapons. To assist in the provision of personnel to man the anti-aircraft armament in merchant ships, soldiers were lent to the Navy. Thus started the Maritime Regiments. Their men are now enrolled in the Royal Artillery, but originally four-fifths of them came from all corps in the Army. They are administered by the War Office, but their training is common with that of naval and mercantile ratings performing the same duties, and their allocation to ships is done by the Admiralty.

UNITS IN MADAGASCAR.—The regiments represented in the Madagascar operations were the Royal Scots Fusiliers, Royal Welch Fusiliers, East Lancashire Regiment, South Lancashire Regiment, Northamptonshire Regiment and Seaforth Highlanders. There were also artillery, some tanks, a small number of Commando troops and some Royal Marines.

CADET FORCE.—The King has approved the re-designation of the Cadet Force as " The Army Cadet Force."

R.E.M.E.—The re-organization made necessary by the formation of a new corps, the Royal Electrical and Mechanical Engineers, came into operation in the United Kingdom on 1st June. The new corps is responsible for Army mechanical maintenance, including the recovery and repair of tanks in action. It will consist of the entire mechanical engineering side of the R.A.O.C., the bulk of the maintenance staff of the R.A.S.C., and a portion of the mechanical maintenance staff of the R.E.

The formation of the R.E.M.E. will also result in the R.A.O.C. being given full control as regards the provision, storage and issue of all vehicles, including spare parts, for the Army. This means that certain members of the R.A.S.C. will be absorbed into the R.A.O.C.

PAST NEGLECT OF THE ARMY.—The Home Secretary, Mr. Herbert Morrison, speaking on 16th July on the course of the war, said we ended the last war a predominant military Power. We had invented the tank and developed it into a war-winning weapon. Then we threw it all away. There remained small groups of able soldiers who worked at it and who, we are told, anticipated all the main developments of the new German technique of mechanical war. But the country was not interested, the money was not forthcoming. Our Regular Army was a tiny force, and we thought little of our soldiery.

Never again, while the risk of war remained, must we allow ourselves to neglect our land weapon. " I want to be frank about what I think—within a reasonable degree of discretion," Mr. Morrison added. " We were all responsible for the treatment that the Army received between the last war and this. I have condemned myself and accept my share of responsibility and blame as a citizen and a member of Parliament. I think that all political parties and phases of thought were responsible. But I would add a reservation about one man whose voice was pretty well a solitary one, though an urgent one, and that is the present Prime Minister."

CIVILIAN AIR RAID CASUALTIES.—The following figures show civilian casualties due to air raids in the United Kingdom during 1942 :—

	Killed.	*Injured and detained in hospital.*	*Total.*
January	112	61	173
February	22	21	43
March	21	13	34
April	938	998	1,936
May	399	425	824
June	300	337	637

EMPIRE CIVILIAN CASUALTIES.—It was officially stated on 9th June that the number of civilian casualties in the British Empire (excluding casualties at sea) from 3rd

September, 1939, to 2nd September, 1941, was: Killed, 43,675; Injured and detained in hospital, 50,346.

CANADA

CASUALTIES.—Casualties in the Canadian armed forces up to 12th March, 1942, totalled 1,857 killed, 466 missing, 1,817 prisoners.

INDIA

RECRUITING.—Recruits enrolled in the Indian Army last May totalled 70,000—a record figure. Previously, recruitment had been about 50,000 a month.

ALLIED FORCES

UNITED STATES

AMERICAN FORCES IN EUROPE.—It was announced in July that, under the United States Commander, European Theatre of Operations (Lieut.-General D. D. Eisenhower), there were five principal subordinate commanders who reported directly to him for orders. These subordinate commanders we e :—

Major-General M. W. Clark, commanding the Ground Troops in England;

Major-General C. Spaatz, commanding the United States Army Air Forces;

Major-General J. C. H. Lee, commanding the Services of Supply organization;

Major-General R. P. Hartle, commanding the United States Army, Northern Ireland Forces; and

Major-General C. H. Bonesteel, commanding in Iceland.

The Theatre Commander, in a statement on 14th July, said: "A notable aspect of our early experiences in Great Britain is the cordiality of the welcome extended to our troops by their British comrades. United States officers and men alike feel that everything possible, both officially and personally, has been done to make them comfortable and to facilitate their efficient operation. One soldier of the American Air Force told me that his present station was the finest one he had yet occupied in more than a year's service in the Army. Universally, our pilots and enlisted men of the Air Force regard the R.A.F. as a friend and 'buddy.'

"I have checked my own findings on this subject with those of my senior subordinate commanders in England—General Spaatz, General Lee, and General Clark. They unanimously agree that the co-operation and assistance extended to our troops by the British military services and by the British public give assurance of success in the co-ordinated development of our two Forces. All contingents of the American Army in this theatre are hopeful that the British public and the British Armed Forces will understand the depth of the American appreciation."

AIR NOTES

ROYAL AIR FORCE

His Majesty The King

The King and Queen visited three stations of the Bomber Command on 12th June. They met pilots and air crews who had taken part in the mass raid on Cologne, inspected some of the big four-engined Stirling bombers, and saw specimens of the bomb loads carried. Air Vice-Marshal J. E. A. Baldwin, who had flown in the Cologne raid, conducted the King and Queen on their tour.

During a visit to a station in the Fighter Command on 29th April, the King listened-in during an offensive sweep over Northern France to radio-telephone conversations between the pilots. Half an hour later, on their return, the King was able to converse with them on their experiences.

During a visit in May to the Southern Command of the Army, the King and Queen saw in action some of the new airborne troops using gliders and dropping by parachute from aircraft of the Army Co-operation Command, R.A.F. A mimic daylight attack on an airfield was presented.

Appointments

Ceylon.—It was announced in Colombo on 12th May that Air Vice-Marshal J. H. d'Albiac had for some time been Air Officer Commanding, R.A.F., Ceylon. It was to him that the Commander-in-Chief, Admiral Sir Geoffrey Layton, referred during his broadcast congratulations on 5th April to the air force of Ceylon for its great work in beating off the Japanese air raid on Easter Sunday.

Observer Corps.—On 9th June the Air Ministry announced that Group Captain G. H. Ambler had been appointed Commandant of the Royal Observer Corps, with effect from 25th June, in succession to Air Commodore A. D. Warrington-Morris (retired). Group Captain Ambler will hold the acting rank of Air Commodore in his new appointment.

Aircraft Production.—On 3rd June the Ministry of Aircraft Production announced that, acting on medical advice, Sir Charles Craven had resigned his appointment as Controller-General at the Ministry. He would remain on a part-time basis as Chief Industrial Adviser to the Ministry. On 26th June the appointment of Mr. Alexander Dunbar as Controller-General was announced. Mr. Dunbar had been Director in charge of Vickers-Armstrong's aviation interests since 1938.

Promotions

The following promotions were announced in the *London Gazette* on 3rd July :—

Air Marshals to be Air Chief Marshals (Temporary), to date 1st July, 1942 :—

Sir Richard E. C. Peirse, K.C.B., D.S.O., A.F.C.

Sir W. Sholto Douglas, K.C.B., M.C., D.F.C.

Sir Arthur W. Tedder, K.C.B.

A large number of promotions to Air Commodore, Group Captain, Wing Commander and Squadron Leader were also made with effect from 1st June, 1942.

Medical Branch.—The following was announced on 3rd July :—

Air Vice-Marshal (temporary Air Marshal) Sir Harold E. Whittingham, K.B.E., to be Air Marshal, to date 1st March, 1941.

The following were announced in the *London Gazette* on 14th April, 1942 :—

Air Vice-Marshal (temporary Air Chief Marshal) Sir Charles F. A. Portal, K.C.B., D.S.O., M.C., to be Air Chief Marshal, with seniority 26th May, 1940.

Air Marshal (temporary Air Chief Marshal) Sir Wilfrid R. Freeman, K.C.B., D.S.O., M.C., to be Air Chief Marshal, to date 27th May, 1940.

Air Marshal (temporary Air Chief Marshal) Sir Philip B. Joubert de la Ferté, K.C.B., C.M.G., D.S.O., to be Air Chief Marshal, to date 1st July, 1941.

The following Air Vice-Marshals (temporary Air Marshals) were promoted to Air Marshal from the dates named :—

Sir Richard E. C. Peirse, K.C.B., D.S.O., A.F.C. (1st July, 1940).

Sir W. Sholto Douglas, K.C.B., M.C., D.F.C. (25th November, 1940).

Sir Arthur W. Tedder, K.C.B. (1st June, 1941).

Sir William L. Welsh, K.C.B., D.S.C., A.F.C. (1st July, 1941).

The following Air Commodores (temporary Air Vice-Marshals) were promoted to Air Vice-Marshal from the dates named :—

K. R. Park, C.B., M.C., D.F.C. (1st July, 1940).

D. G. Donald, C.B., D.F.C., A.F.C. (1st July, 1940).

N. H. Bottomley, C.B., C.I.E., D.S.O., A.F.C. (1st July, 1940).

R. M. Drummond, C.B., D.S.O., O.B.E., M.C. (acting Air Marshal) (10th January, 1941).

F. J. Linnell, C.B., O.B.E. (acting Air Marshal) (10th January, 1941).

J. O. Andrews, D.S.O., M.C. (10th January, 1941).

J. C. Slessor, C.B., D.S.O., M.C. (10th January, 1941).

A. Coningham, C.B., D.S.O., M.C., D.F.C., A.F.C. (1st June, 1941).

Group Captain (temporary Air Vice-Marshal) C. E. H. Medhurst, C.B., O.B.E., M.C., to be Air Vice-Marshal (1st June, 1941).

A number of promotions in other grades were also announced in the *London Gazette* on 14th April.

On 23rd June the promotion was announced of Air Commodore C. H. K. Edmonds, D.S.O., O.B.E., to be Acting Air Vice-Marshal (18th May, 1942).

Retirement

In the *London Gazette* on 10th July it was announced that Air Marshal (acting Air Chief Marshal) Sir Charles S. Burnett, K.C.B., C.B.E., D.S.O., is placed on the retired list, and retains the rank of Air Chief Marshal (4th June, 1942).

Honours and Awards

Victoria Cross.—On 28th April it was announced that the King had conferred the Victoria Cross, in recognition of most conspicuous bravery, on *Acting Squadron Leader J. D. Nettleton*, No. 44 (Rhodesia) Squadron. Squadron Leader Nettleton was the leader of one of two formations of six Lancaster heavy bombers detailed to deliver a low-level attack in daylight on the Diesel engine factory at Augsburg, in Southern Germany, on 17th April, 1942. The enterprise was daring, the target of high military importance. To reach it and get back, some 1,000 miles had to be flown over hostile territory. Soon after crossing into enemy territory his formation was engaged by 25 to 30 fighters. A running fight ensued. His rear guns went out of action. One by one the aircraft of his formation were shot down until in the end only his own and one other remained. The fighters were shaken off, but the target was still far distant. There was formidable resistance to be faced. With great spirit and almost defenceless, he held his two remaining aircraft on their perilous course, and after a long and arduous flight, mostly at only 50 feet above the ground, he brought them to Augsburg. Here anti-aircraft fire of great intensity and accuracy was encountered. The two aircraft came low over the

roof tops. Though fired at from point blank range, they stayed the course to drop their bombs true on the target. The second aircraft, hit by flak, burst into flames and crash-landed. The leading aircraft, though riddled with holes, flew safely back to base, the only one of the six to return. Squadron Leader Nettleton, who has successfully undertaken many other hazardous operations, displayed unflinching determination as well as leadership and valour of the highest order.

Personnel

University Courses.—The fourth of the special University courses for R.A.F. pilot and observer candidates will start in October next. The course lasts six months, during which Cadets study various University subjects chosen by the Air Ministry, and at the same time become members of the University Air Squadrons. Here they have training in R.A.F. ground duties corresponding to the Initial Training Wing course with the R.A.F., but with special additions appropriate to a course for potential officers. Successful candidates are afterwards sent direct to a Flying Training School. Information on the scheme can be obtained from the Air Ministry (P.7), London.

Glider Pilots.—Pilots of gliders recently trained or now in training are soldiers, not airmen. It has been explained that this decision, which may have caused surprise in some quarters, is the outcome of an agreed policy between the Air Ministry and the War Office. The pilot being a soldier, as soon as he has landed his glider he can join up with his former passengers and take his part in the fighting on land. If he were an airman, he would have to receive special training for this type of warfare, or else be forced to remain idle, unable to take any further part in the operation.

Gliding instruction for Cadets in the Air Training Corps has been started. Early in April last, Mr. W. W. Wakefield, M.P., Director of the Air Training Corps, during a tour of the North-East Region, inspected a glider at one of the instruction schools, and also the workshops, club-rooms and dormitories.

Air Training Corps

On 13th July it was decided to transfer to the Air Ministry the work formerly done by Headquarters of the Corps. In future, the Air Ministry will deal direct with the Regional A.T.C. Commandants. Air Commodore J. A. Chamier, the former Commandant of the Corps, was appointed to the post of Inspector of the Air Training Corps created in the Air Ministry. He is thus able to work in closer touch with the Director of the A.T.C., Mr. W. W. Wakefield, M.P., in formulating policy and in directing its execution. The Inspector, like the Director, was appointed on the staff of the Air Member for Training, Air Marshal A. G. R. Garrod, to whom he will report on all matters affecting the training, administration and general well-being of units.

Units of the Corps in the London Boroughs had formerly been administered direct by Headquarters of the Corps instead of being included in any region. Simultaneously with the introduction of the new organisation, a Regional Commandant for London was appointed. His region will include certain of the units previously included in the Eastern Region. Air Chief Marshal Sir William Mitchell, K.C.B., C.B.E., D.S.O., M.C., A.F.C. (retired), has accepted the appointment of Regional Commandant for London without remuneration.

Aerodrome Defence

Details concerning the constitution, organization and functions of the newly-formed Royal Air Force Regiment have been published in Air Ministry Orders. The regiment will take over all local defence of aerodromes, assisted by all R.A.F. men employed on the station, who will be known as " backers up." All executive action will be implemented through the R.A.F. chain of command in accordance with a policy laid down by the Commander-in-Chief, Home Forces. The control and supervision of the R.A.F. Regiment will be vested in the Commandant of the Regiment. He will exercise his

powers through senior officers of the Regiment appointed to the staffs of commands and groups, and he will be responsible to the Air Council for the Regiment's efficiency.

Training schools have been established. Members of the Regiment will be drawn from suitable officers employed on full time ground defence duties; direct entrants, who will be commissioned in the R.A.F.V.R.; Army officers who may elect to relinquish their Army commissions; airmen commissioned on passing out of the officer cadet training unit; Army officers loaned to the R.A.F.; airmen already mustered as ground gunners; aircraft hands; airmen redundant to their trades; airmen who volunteer for service with the Regiment; and recruits from civil life. Existing R.A.F. rank titles will be adopted, but loaned Army personnel will retain their Army rank titles. All ranks are to wear distinguishing arm title badges of "R.A.F. Regiment" in light blue on a dark blue background.

Supplies to Russia via Middle East

During his tour of the Middle East in May, H.R.H. the Duke of Gloucester saw aircraft in process of supply to Russia. At one aerodrome where his aircraft landed, large numbers of American-built bombers were being assembled. Originally this was done by R.A.F. technicians, but increasing numbers of American engineers were arriving to take over the task. On being assembled, the aircraft are handed over to Russian pilots, who fly them over the wildest mountain country in all weathers direct to the Eastern Front. Weapons of all kinds for the ground forces are also following much the same route. At aerodromes and assembly points along the route communities of three nationalities have sprung up, very largely self-contained. Many of the Russian pilots have brought their wives with them and have formed small colonies side by side with the British and American.

Women's Auxiliary Air Force

The Duchess of Gloucester, Air Commandant, on 21st April inspected two sections of the W.A.A.F. in the Eastern Counties. On 5th May, Her Royal Highness inspected sections at two R.A.F. stations in the West of England. On 5th June the Duchess inspected sections at two R.A.F. stations in the Eastern Counties.

At the end of June the W.A.A.F. completed three years' service. On 28th June over a thousand members paraded at a R.A.F. station for a drumhead service as part of the anniversary celebrations held all over the country. After the service, the salute was taken by Air Commandant K. J. Trefusis Forbes, Director of the W.A.A.F. A message was read from Air Marshal Sir Charles Portal, who said that the R.A.F. had watched with admiration the skill and keenness of the officers and airwomen in their work, and was grateful for the increased strength and efficiency which they brought to the common service.

DOMINIONS AND COLONIES

Commonwealth Air Training Plan

Ottawa Conference.—A conference of the United Nations on air training opened in Ottawa on 18th May. It was attended by about a hundred delegates from every allied country which had a direct interest in the British Commonwealth Air Training Plan in Canada and in the United States Air Training Programme. Every anti-Axis nation was represented except Russia, who has her own training scheme. The object of the conference was to promote the best methods of co-ordinating and expanding the air training arrangements of the Allies. Captain Balfour, Under-Secretary of State for Air, was the principal delegate from Great Britain.

On 22nd May the conference approved the formation of a Combined Committee on Air Training.

AUSTRALIA

REVIEW OF OPERATIONS.—In a review of the operations of the Royal Australian Air Force from the entry of Japan into the war until the arrival of American aid, Mr. Drakeford, the Air Minister, said that it was from a base in the Netherlands East Indies that the R.A.A.F. struck one of its first blows against the enemy, by raiding the Japanese port nearest to the N.E.I. on the day after Japan attacked. The Japanese replied with raids on R.A.A.F. bases. In spite of losses of aircraft and men, the R.A.A.F. continued to strike to the North-West and North-East of Australia, although faced with the stupendous task of carrying out reconstruction in face of enemy attack.

On 15th December attacks on the Japanese base of Kapingamarangi, in the Carolines, 750 miles North-East of New Guinea, began and continued for some time. Perhaps the finest achievement in this period were long-range reconnaissance raids on the Japanese base in the Carolines. They involved great risks and required great navigational skill, for the tiny specks of islands had to be located at the end of long and arduous flights. Meanwhile, Rabaul and other bases to the North-East were continually attacked, in nightly raids and by day, against odds of ten to one. With new fighters and bombers, an infusion of crews from squadrons famous abroad, and a flood of personnel from Australia, the R.A.A.F. face the future with renewed vigour.

MALAYA RECONNAISSANCE.—In a statement on 18th May, Mr. Drakeford revealed some of the achievements of R.A.A.F. pilots in old unarmed and unarmoured fighters who volunteered for special reconnaissance flights over Malaya. To give them more height, speed, and range they stripped the armaments of the aircraft and fitted extra tanks. Daily these airmen penetrated deeply into enemy territory and took many valuable photographs. Frequently they returned with their machines riddled with bullets, but not an aeroplane was lost, though they were no match for the faster modern Japanese fighters. When attacked the pilots dived into the clouds and played hide and seek with the Japanese. Mr. Drakeford added that since the outbreak of the Pacific War the R.A.A.F. had destroyed 180 Japanese aeroplanes and damaged 100, and probably damaged 80 more.

NEW AERODROMES.—Over a hundred new aerodromes, it was stated in Melbourne on 24th June, had been built in Australia for the Allied air forces during the previous three months, and many more were in process of construction.

CANADA

TRAINING FOR R.A.F.—In a speech in Toronto on 10th June, Mr. Malcolm MacDonald, High Commissioner, referring to the successful outcome of the recent air conference at Ottawa, said that the British Air Ministry had had no hesitation in agreeing that all preliminary air force training should come under the control of the Royal Canadian Air Force, because all British aerodromes were now required for operational squadrons.

INCREASE IN SQUADRONS.—In a statement in London on 30th June, Air Marshal Edwards said that as a result of a decision taken at the Ottawa Conference, the number of R.C.A.F. squadrons stationed in this country was to be increased by 50 per cent. There would be a Bomber Group and Fighter and Coastal Command squadrons. Although these would be manned entirely by Canadians, including the ground crews, this would not in any way affect the R.A.F. control of operations, which gave complete satisfaction to the R.C.A.F.

FAR EAST.—On 30th May, *The Times* announced that the first R.C.A.F. squadron had arrived in the Far East, complete with pilots, air crews, administrative staff and ground crews. It is equipped with flying boats. The ground staff arrived by sea after a journey of many weeks. The air crews flew their flying boats. This squadron had already done useful work in the European theatre of war. On 8th June it was announced that the squadron consisted of Catalina flying boats, and made the journey via Gibraltar,

Malta, and Libya. The squadron had arrived in Ceylon, and it was thought this was the first time a whole squadron had flown there.

NEW ZEALAND

DEVELOPMENT.—In a survey of New Zealand's air strength at the end of June, Air Commodore R. V. Goddard, Chief of the Air Staff, said that since December the number of New Zealand's air squadrons had increased seven times. They could carry ten times the weight of bombs and sixteen times as many guns. He referred to the historical significance, though it had never been properly appreciated, of New Zealand's influence on the employment of air power—the forced diversion of powerful German air forces to Greece and Crete which delayed the whole German plan to attack Russia through the Ukraine. He had no doubt that New Zealand's sacrifices in Greece and Crete would prove one of the decisive factors of the War.

BERMUDA

About 30 Bermudans are now serving in the R.A.F. as pilots, air gunners, or members of the Air Sea Rescue Service. The pilots are the product of the Bermuda Flying School, started early in 1940 by an American who wished to help the British war effort. The Government of Bermuda gave permission for the use of light training aircraft, and with the help of Lieutenant-General Sir D. K. Bernard, then Governor of Bermuda, recruits were quickly enrolled. Preliminary training was given by Captain Edward Stafford, of the U.S. Army Reserve, and resulted in all the candidates accepted by the R.A.F. subsequently gaining their wings. A large proportion of these volunteers came from the Bermuda Volunteer Rifle Corps, which has been affiliated for many years to The Lincolnshire Regiment.

UNITED STATES

REORGANIZATION.—According to a report in *The Aeroplane*, reorganization of the United States Army Air Forces has taken place. The old term "Army Air Corps" has disappeared altogether and a system somewhat resembling that of the Royal Air Force has been adopted to secure unified central control of administration, equipment and training and to leave combat commands a large measure of autonomy in operation, particularly when they are based in distant lands.

The Commanding General with his Advisory Council now have the Chief of the Air Staff and the Deputy Chief of the Air Staff in close association, as usual. Next come the departments of Personnel, Intelligence, Training, Supply, Plans and Air Inspection. These are served by the Directors of Military Requirements, of Technical Services, of Public Relations, Personnel, Finance and Medical Services, and the Judge Advocate. Eight Commands more immediately accessory to flying, such as Technical Training, Flying Training, Ground Command, Weather, Communications and Ferrying, form the next dependent section, and below them come the offices of the flying squadrons and wings, with Air Defence, Bombardment and Ground Support as ancillaries.

GERMANY

TRAINING OF N.C.Os.—A recent article in the Nazi newspaper *Der Neue Tag* by an oberstleutnant Streppel gave some details of a new system adopted by the *Luftwaffe* for training N.C.Os. An interesting point made by the writer is that the German Air Force is now "catching them young," at the age of 17.

"The *Luftwaffe*," says Streppel, "has begun to establish schools for N.C.Os. Recruits who wish to become regular N.C.Os. can enlist as volunteers. The minimum age limit is 17. On admittance the pupils are treated as soldiers in the full sense of

military law, that is, they receive pay, board, kit, accommodation, medical attention, etc., the same as every soldier, and have the same obligations and rights.

" In addition to purely military training, the pupils take a general knowledge course to brush up and extend the knowledge they already possess. Pupils remain at the school for one year, after which they are drafted into the forces, according to their choice and competence, either to the *Fliegertruppe* (aircrews), parachutists, *Flak* or the *Luftnachrichtentruppe* (signals troops, wireless mechanics, radio operators, etc.). They pass out of the school with the rank of *Gefreiterif* (L.A.C.) if their work at the school merits such promotion.

" They receive the necessary training in the use of arms later by attending course at another school. Pupils are promoted to *Uffz* (corporal), provided they are fit for promotion, after two years' service.

" By his service in the *Luftwaffe*, either in the training, administrative or technical branches, every N.C.O. on the active list lays the best foundations for his subsequent career, irrespective of whether he takes up a Government post or some other profession. He may also eventually settle in the conquered territories in the East.

" The whole instruction and training at the N.C.Os. school is devised to fit the pupil for his subsequent career, and is much more comprehensive than could be possible when training in the ranks. Finally, the pupil, at a comparatively early age, after completing twelve years' service, can take up his chosen profession."

The emphasis on the military character of these young airmen's training and the promise of a slice of stolen land " in the East " are typically Nazi touches, more reminiscent of ancient tribal warfare than of modern civilisation.

Even more interesting is the admission that the Luftwaffe is planning to get a period of twelve years' service from its young N.C.Os. Apparently, belief in the Blitzkreig and " victory this year " is now a fading dream.

REVIEWS OF BOOKS

GENERAL

Lessons of Allied Co-operation: Naval, Military and Air, 1914-1918. By Sir Frederick Maurice, K.C.M.G., C.B. (Oxford University Press.) 10s. 6d.

The author studies the subject of co-operation between the Allies over the whole course of the last Great War and finishes up with a chapter of conclusions. As he says in his Foreword, all the material used in his book " has been published in the official histories of the war, in the biographies of the protagonists and in command papers, but it has not hitherto been put together. For the comments I am solely responsible."

General Maurice has produced a most interesting and instructive book, well documented and written with restraint. His comments are to the point. His main conclusion is that " the easiest form of military co-operation to arrange is that of air forces, the most difficult that of armies." Whether that justifies our toying with the idea of an international air force after the War—as he seems to do—is debatable; especially remembering the futility of such attempts and their disastrous effects on our own fighting Services after the last war.

From the Land of Silent People. By Robert St. John. (George G. Harrap & Co.) 8s. 6d.

This is a most interesting, illuminating and highly readable book. It covers that period of about a month in the Spring of 1941 when the Germans overran Yugoslavia and Greece, and shows vividly the terrible effectiveness of heavy and ruthless air bombardment upon opponents unequipped to meet such attacks in the air.

The author—a prominent American journalist—was in Belgrade when the German onslaught on Yugoslavia began. After giving a graphic description of the devastating German air attack on Belgrade, he continues with a thrilling story of his adventures whilst escaping from Yugoslavia. With a few companions, he reached the Adriatic coast, got away in a small boat and landed at Corfu. Thence he managed to get passage in a ship to Patras, on the Greek mainland. From Patras he made his way to Corinth and on to Argos. There he came up with the British evacuation, and got away in H.M. destroyer " Havoc," with perhaps the last British party to leave Greece. After a day or two in Crete, he got passage to Alexandria in a British convoy.

NAVAL

Brassey's Naval Annual, 1942. Edited by Rear-Admiral H. G. Thursfield. (Messrs. W. Clowes.) 30s.

The thirty-third edition of Brassey follows its traditional form and is essentially a book of reference. Though cut down by war restrictions, it covers the most pressing and topical aspects of the Navy and the War at sea, and although it makes no pretence to present anything that is strikingly original, except in individual opinions, it maintains a high standard of sane balance and is invaluable in its proper functions.

At a time when the question of air and sea power is liable to give rise to violent opinions, reminding one of the old naval definition of a wardroom cag as " dogmatic statement followed by flat contradiction and personal abuse," it is refreshing to find two chapters, admittedly written from different points of view, setting forth various aspects clearly and moderately, and with really valuable results. Major Oliver Stewart and Commander H. Pursey are to be congratulated, and incidentally the former's account of the sinking of the " Prince of Wales " and " Repulse " draws attention to a point which is all too often neglected outside Service circles—the handicapping of anti-aircraft fire by bombing, however ineffective in itself, during attacks by torpedo-dropping aircraft.

The chapter on the United States Navy, which is covered by the Editor himself, must have presented a rather delicate problem of policy. So much is to be said on this subject during 1941, culminating in Pearl Harbour, that the whole book might have been filled with it. Instead, he wisely decided to confine attention to official statements and documents, covering far less ground but doing it far more thoroughly. In these days of paper control, the reduced size of journals gives very few the opportunity of reading documents verbatim, and this section is therefore particularly valuable to the serious reader.

That veteran authority Sir Archibald Hurd covers "Merchant Shipping and the Battle of the Seas," a subject in which he has specialized since the early days of the last war, when his was a voice crying in the wilderness the importance to the country of those merchant ships which the authorities were so badly neglecting.

It is not very difficult to penetrate the anonymity of "Flag Officer" who writes the chapter on Combined Operations with its sound horse sense. Mr. Alexander Kiralfy, an expert who is not as well known in Britain as he is in the United States, wrote his article on the Eastern War well back in 1941, so that it is largely prophetic and its main interest is the comparison of carefully considered American opinion with what has actually occurred. Mr. F. E. McMurtrie records a number of odd items of interest in the Progress of Foreign Navies which are not very generally known; for instance, that the U.S. submarine S.25 is now the Polish "Jastrzab," although in a later section Poland is not given as owning any submarines, while the ex-American R.3, now H.M. submarine P.511, is also not listed in the Tables. In such matters there is not always close co-operation between the sections of the book; for example, on page 80 it is recorded that Turkey acquired M.M.S.1 and M.M.S.2 in 1939, but they are still listed as British on page 194.

The Tables are, in fact, the weakest part of the Annual and are overdue for an overhaul. There are numerous omissions and inconsistencies, and it would seem that the time has arrived for the whole format of this section—a relic of the 'eighties—to be modernized. A complete table of war losses would be a particularly useful addition in future years.

The Royal Navy. By Lieutenant-Commander Allan Baddeley, R.N. (Frederick Muller.) 5s.

This well-illustrated little book, unavoidably made slim by war-time conditions, is published at a very opportune moment. Not only should every citizen regard the Service as a thing to be understood, and not as a "mystery craft" which is beyond his comprehension, but thousands of men are entering the Navy from "under the lamp-posts," and the combined operations which are so much in evidence demand a reasonable understanding of each Service by the other two. Each need is filled by this book within the limits of its size, and filled well. It does not contain much that is new to the ordinarily well-informed reader, but few of the readers whom it can serve best are well-informed. The information that it gives is pleasantly recorded, personal prejudices are comparatively few and the majority of the rapid changes of the present war have been noted. Most of its faults are of omissions, and are unavoidable with war-time restrictions, although there are a few minor errors on the historical side.

MILITARY

Unexpected: A Book of Memories. By Lieut.-General Sir Douglas Brownrigg, K.C.B., D.S.O. (Hutchinson & Co.) 12s. 6d.

This interesting, brief autobiography will appeal to many Service readers and others. General Brownrigg's military career covered the period from 1905 onwards, his last appointment being that of Adjutant-General to the B.E.F. in France in 1939–1940. During the war of 1914–1918 he served on the staff of the 13th Division in Gallipoli and Mesopotamia, but his war experiences are only briefly recorded.

Throughout the book the author goes into little detail on purely military matters; he discusses events, men and affairs in a friendly, happy and contented spirit. There are excellent pen-pictures of Generals Maude and Marshall, successive Commanders-in-Chief in Mesopotamia, and shrewd comments on many other people.

One of the most interesting chapters deals with a trip to the United States in 1934. General Brownrigg relates that his chief, and perhaps rather surprising, impression of a visit to the great Cadet College at West Point was the strictness of the discipline.

Altogether, this readable book of memoirs can be safely recommended.

Machine Warfare. By Major-General J. F. C. Fuller. (Hutchinson.) 8s. 6d.

Everyone interested in the subject should read this little volume. We all know of General Fuller as a stimulating and provocative writer, a pioneer in the art of mechanized warfare, a student of war and a man of strong and independent views. Although he gives this book the sub-title of "An Enquiry into the Influences of Mechanics on the Art of War," the reader need not anticipate a dry and highly technical treatise. The author writes on broad, general lines and is always interesting.

The book, which was completed in November, 1941, is divided into three parts—Machine Warfare in Development, in Theory and in Practice. There is a Preface, which starts with the words: "This is a book of ideas as well as of machines," and such is indeed the case.

The War on the Civil and Military Fronts. By Major-General G. M. Lindsay, C.B., C.M.G., D.S.O. (Cambridge University Press.) 5s.

These are the Lees Knowles military lectures for 1942. General Lindsay has certainly maintained the high standard set by his predecessors. He is well qualified to discourse on modern war. During the war of 1914–18 he was a machine-gun specialist. After 1918 he devoted himself to the study of mechanized warfare and held a number of important posts, including that of Inspector Royal Tank Corps at the War Office. For the first six months of this war he commanded a Highland division. Since April, 1940, he has been Deputy Regional Commissioner, South-Western Region.

The first of the five chapters in this book deals with "Features and Fundamentals"—the features (ever changing in the course of years) that affect modern warfare, and the fundamentals (or "principles of war") that are eternal. The author considers that there are "only four real fundamentals of war," namely, Fire-power, Mobility, Protection and Morale. Chapter II discusses the employment of armoured forces in the offensive. Chapter III considers the German doctrine of armoured war and the defensive-offensive battle. The last two chapters deal with the defence of Britain, including the role of the Home Guard, the Civil Front and the organization of the Civil Defence services. The importance of organized co-operation between the civil and military services is heavily stressed.

The whole book is instructive, thought-provoking and merits careful study.

India's Army. By Major Donovan Jackson. (Sampson Low, Marston & Co.) 10s. 6d.

To the best of our knowledge, this is the only compilation which includes a short history of every regiment of the Indian Army as it existed in 1939 prior to the outbreak of the present war. As such, it makes a useful book of reference. The historical summaries are necessarily brief and are not intended to compete with individual regimental histories. Although nearly 600 pages long, this volume is small, compact and handy in size.

ADDITIONS TO THE LIBRARY

GENERAL

UNEXPECTED. By Lieut.-General Sir D. Brownrigg. 8vo. (Hutchinson & Co.) 12s. 6d. Presented.

SURVEY OF BRITISH COMMONWEALTH AFFAIRS. Vol. II. Problems of Economic Policy 1918–1939. Part II. By W. K. HANCOCK. 8vo. (Oxford University Press.) 16s.

VOLCANIC ISLE. By W. Fleisher. 8vo. (Jonathan Cape.) 10s. 6d.

THE EIGHTH QUARTER, JULY 1ST TO SEPTEMBER 30TH, 1941. By P. P. Graves. 8vo. (Hutchinson & Co.) 9s. 6d.

EDUCATION FOR DEATH. By Gregor Ziemer. 8vo. 7s. 6d.

BETWEEN HITLER AND MUSSOLINI. MEMOIRS. By Prince Starhemberg. (Hodder & Stoughton, Ltd.) 15s.

THE WAR ON THE CIVIL AND MILITARY FRONTS. By Major-General G. M. Lindsay. 8vo. (Cambridge University Press.) 5s.

CAN BRITAIN ATTACK? By Major-General R. Pope Hennessy. 8vo. (Collins.) 2s. 6d.

THE NINTH QUARTER, OCTOBER 1ST–DECEMBER 21ST, 1941. By Philip P. Graves. 8vo. (Hutchinson & Co.) 9s. 6d.

THE LIFE OF SIR PERCY COX. By Philip Graves. 8vo. (Hutchinson & Co.) 18s.

LESSONS OF ALLIED CO-OPERATION—NAVAL, MILITARY AND AIR, 1914–1918. By Sir Frederick Maurice. 8vo. (Oxford University Press.) 10s. 6d. Presented.

THE CRIPPS MISSION. By R. Coupland. 8vo. (Oxford University Press.) 1s.

DEFENCE WILL NOT WIN THE WAR. By W. F. Kernan. 8vo. (Heinemann.) 6s.

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MISSION TO MOSCOW. By J. E. Davies. 8vo. (Gollancz.) 15s.

FROM THE LAND OF SILENT PEOPLE. By Robert St. John. 8vo. (Harrap.) 8s. 6d. Presented.

NAVAL

ARK ROYAL—THE STORY OF A FAMOUS SHIP. By Sir H. Russell and Commander H. Pursey, R.N. 8vo. (John Lane, the Bodley Head.) 4s. 6d.

NAVAL WARFARE. 2nd Edition. Revised by Commander J. Creswell, R.N. 8vo. (Sampson Low, Marston & Co., Ltd.) 12s. 6d. Presented.

JANE'S FIGHTING SHIPS, 1941. Edited by Francis E. McMurtrie, A.I.N.I. Folio. (Sampson Low, Marston & Co., Ltd.) 63s. Presented.

PARSONS MEMORIAL LECTURE. SIR CHARLES PARSONS AND THE ROYAL NAVY. By Sir Stanley V. Goodall, K.C.B., D.B.E., R.C.M.C. Pamphlet. Presented by the Author.

ROYAL NAVY. By Lieut.-Commander Allan Badderley, R.N. 8vo. (Frederick Muller, Ltd.) 5s. Presented.

MILITARY

THE NARRATIVE OF PRIVATE BUCK ADAMS, 7TH DRAGOON GUARDS, ON THE EASTERN FRONTIER OF THE CAPE OF GOOD HOPE, 1843–1848. Edited by A. Gordon-Brown. 8vo. (The Van Riebeck Society, Cape Town.) 12s. 6d.

CAMP AND QUARTERS: SCENES AND IMPRESSIONS OF MILITARY LIFE. 2 vols. By Major J. Patterson. 8vo. (Saunders & Otley.) 1940. Presented by Lieut.-Colonel H. G. de Walteville, C.B.E.

INDIA'S ARMY. By Major Donovan Jackson. Small 8vo. (Sampson Low, Marston & Co., Ltd.) 10s. 6d. Presented.

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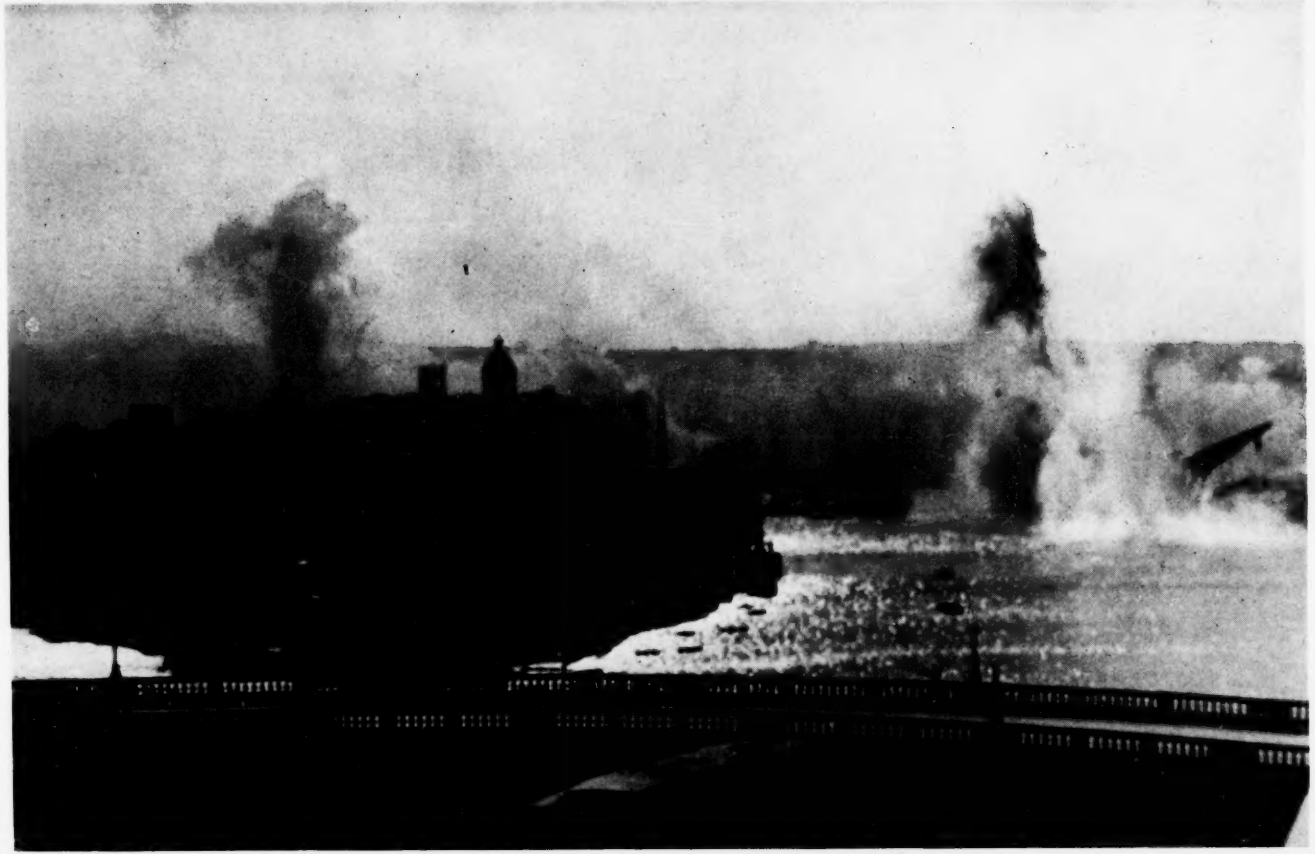

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